USDA

United States
Department of
Agriculture

Forest Service

Draft Environmental Impact Statement

Bordertown to California
120 kV Transmission Line Project

December 2014

Humboldt-Toiyabe National Forest, Carson Ranger District
Sierra County, California, and Washoe County, Nevada

Title: Bordertown to California 120 kV Transmission Line Project

Draft Environmental Impact Statement

Sierra County, California, and Washoe County, Nevada

Lead Agency: USDA, Forest Service

Cooperating Agencies: Bureau of Land Management, Nevada Department of Wildlife, Truckee Meadows Planning Agency, Washoe County, Sierra County, and City of Reno

Responsible Official: William A. Dunkelberger, Forest Supervisor

Humboldt-Toiyabe National Forest

1200 Franklin Way, Sparks NV 89431

For information: Marnie Bonesteel

Humboldt-Toiyabe National Forest

1200 Franklin Way, Sparks NV 89431

775-352-1240

Abstract: The U.S. Forest Service, Humboldt-Toiyabe National Forest proposes to issue a special use permit for the construction, operation, and maintenance of a new 120 kilovolt overhead transmission line connecting the Bordertown and California substations, west of Reno, Nevada. The Bureau of Land Management, Eagle Lake Field Office would amend an existing right-of-way grant to expand the Bordertown substation to accommodate the new transmission line. Temporary improvements to existing roads and the construction of new temporary roads would allow for the installation and maintenance of the transmission line.

The proposed transmission line is subject to the objection procedures of Title 36, Code of Federal Regulations, Part 218.24 Submitted comments should be useful in the Agency's preparation of this Environmental Impact Statement and must be submitted prior to the close of the comment period. The comment period for this draft Environmental Impact Statement extends 45 days following publication of the notice of availability in the *Federal Register*. Comments received in response to this Environmental Impact Statement, including names and addresses of those who comment, will become part of the public record. Anonymous comments will be accepted; however, they will not provide standing to participate in subsequent objection procedures.

Mail Comments to: Forest Supervisor

1200 Franklin Way

Sparks, NV 89431

E-mail Comments to: Comments-intermtn-humboldt-toiyabe@fs.fed.us

Comments are due by: 45 days after the publication of the notice of availability in the *Federal Register*.

Executive Summary

Introduction

The United States Forest Service (USFS), Humboldt-Toiyabe National Forest has prepared this Environmental Impact Statement (EIS) pursuant with the requirements of the National Environmental Policy Act (NEPA) and its implementing regulations issued by the Council on Environmental Quality (40 Code of Federal Regulations 1500-1508). The USFS is the lead agency for this EIS, and the Bureau of Land Management (BLM) Eagle Lake Field Office, City of Reno, Washoe County, Sierra County, Truckee Meadows Regional Planning Agency, and Nevada Department of Wildlife are cooperating agencies.

This EIS is intended to inform the public and disclose the direct, indirect, and cumulative environmental impacts that would result from the construction, operation and maintenance of a new electric transmission line proposed in Sierra County, California, and Washoe County, Nevada.

Summary of the Proposed Project

The proposal is to construct a new 120-kilovolt electric transmission line between the existing Bordertown and California substations. Depending on the alignment selected, the transmission line would be approximately 10.3 to 18.0 miles long. Expansion of the existing Bordertown Substation is proposed to accommodate the transmission line.

The proposed transmission line would require a Special Use Permit from the USFS for a transmission line right-of-way (ROW) across National Forest System (NFS) land and an amended ROW Grant from the BLM for the substation expansion and section of transmission line across BLM-administered public land. Easements would be acquired on private land that would be crossed by the proposed transmission line. Private land would remain under ownership of the title holder, and private property owners would be compensated for the easement. NV Energy would own, operate and maintain the proposed transmission line. The ROW and easements would measure 90 feet in width, with the transmission line generally in the center.

While the proposed transmission line would be constructed within the ROW/easements, temporary ground disturbance required for construction would occur within and outside of the ROW/easements. In general, ground disturbance outside of the ROW would consist of construction of access roads, widening existing roads, staging areas, and portions of transmission wire setup sites. The USFS would issue a temporary Special Use Permit for temporary roads and construction access located outside of the transmission line ROW. Restoration would be required at the completion of construction to re-contour and re-vegetate areas disturbed areas in the project area. Trees beneath the transmission line and within 21 feet of any direction of the transmission line conductors would be removed and trees within the ROW would continue to be removed through the operational life of the transmission line for safety reasons.

Project construction would commence as soon as all necessary agency approvals and permits are obtained and all ROW authorizations and easements are secured. Construction of the project would take 8 to 12 months. NV Energy would inspect the transmission line annually to

determine if maintenance is needed. An inspection that involves climbing pole structures is anticipated once every 10 years. Restoration would be implemented following any maintenance activities that result or require ground disturbance.

Project Alternatives

The transmission line alternative originally proposed, referred to as the "Stateline Alternative", was eliminated from detailed analysis in this EIS and is not considered a viable alternative for implementation (see **Section 2.10.1**). Four alternatives (i.e., action alternatives) were developed and are evaluated in this EIS: the Mitchell Alternative, the Peavine Alternative, the Poeville Alternative, and the Peavine/Poeville Alternative (**Figure 2.1-1**). The Mitchell and Peavine Alternatives, as well as the Stateline Alternative were initially developed from a Constraint Study prepared by JBR Environmental Consultants, Inc. (JBR) (2009a). The Mitchell Alternative was revised after dismissal of the Stateline Alternative to avoid routing on the portion of the Stateline Alternative that was no longer feasible. The Poeville Alternative was developed by the USFS interdisciplinary team in order to maximize compliance with management goals and directives of the *Land and Resource Management Plan* for the Toiyabe National Forest (1986). The Peavine/Poeville Alternative was developed in response to public scoping comments.

The NEPA requires that an EIS include analysis of the "No Action Alternative," against which the effects of the "action" alternatives can be evaluated and compared. Accordingly, the No Action Alternative is evaluated as an alternative in this EIS. Under the No Action Alternative there would be no new transmission line, no substation expansion or temporary access roads constructed between the Bordertown and California substations.

A number of other alternatives were considered and eliminated from further analysis in this EIS. These alternatives and the reasons for their elimination from further analysis are summarized in **Chapter 2**.

Preferred Alternative

The Poeville Alternative has been identified as the Agency Preferred Alternative. This alternative is consistent with the Humboldt-Toiyabe Forest Plan (as amended), "to manage all utility, road and transmission corridors and when utility right of way applications are received, the first priority will be to utilize existing corridors." The Poeville Alternative would utilize existing utility corridors more than any of the other action alternatives. This alternative would maximize the use of federally designated portions of Section 368 Energy Corridor (P.L. 109-58) and regionally designated utility corridors.

Issues Summary

Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues to address. The following three key issues were identified during scoping for this project:

Visual Resource Issue: Transmission line power poles and conductor wires may reduce the existing scenic quality in the proposed ROW/easement and interrupt the scenic integrity of the viewshed.

a. Issue measured by: Conformity with the USFS Visual Quality Objectives (VQOs) based on visual simulations from key observation points (KOPs).

Private Property Value Issue: The presence of a new transmission line adjacent to or crossing private land may reduce private property values.

a. Issue measured by: Acres of private property adjacent to or within the proposed transmission line ROW/easement.

b. Issue measured by: Estimated depreciation of property value.

Public Health and Safety Issue: A new transmission line could increase electromagnetic fields that may affect the health and safety of children at Verdi Elementary School and the public living in rural communities of Verdi, Long Valley, and North Virginia Street.

a. Issue measured by: Measurements of electric field and magnetic field at specific locations.

This page intentionally left blank.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

This page intentionally left blank.

CHAPTER 1 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Forest Service (USFS), Humboldt-Toiyabe National Forest, Carson Ranger District has prepared this Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This EIS is intended to inform the public and discloses the direct, indirect, and cumulative impacts that would result from the Proposed Action and alternatives to the Proposed Action. Additional documentation, including the detailed analyses of project-area resources, may be found in the planning record located at the Humboldt-Toiyabe National Forest, 1200 Franklin Way, Sparks, Nevada 89431.

1.2 BACKGROUND

NV Energy filed an Application for Transportation and Utility System and Facilities on Federal Lands (Standard Form 299), seeking authorization to construct, operate, and maintain a transmission line across National Forest System (NFS) land managed by the Humboldt-Toiyabe National Forest and public land administered by the Bureau of Land Management (BLM). The application included the submittal of a Preliminary Plan of Development (POD) (JBR Environmental Consultants, Inc. [JBR] 2009b) describing the project facilities, right-of-way (ROW) requirements, construction methods, and operations and maintenance activities. If this project is approved, the USFS would issue a Special Use Permit (SUP) for a transmission line ROW, and the BLM would issue an amended ROW Grant. For temporary roads and construction access located outside of the transmission line ROW, the USFS would issue a temporary SUP. NV Energy would purchase easements from private landowners for construction and operation of the line across private property.

Prior to filing an application with the USFS, NV Energy conducted a Geographic Information System (GIS) analysis to identify locations where a transmission line would be undesirable (constraints), as well as locations where it would be more desirable (opportunities). The study is documented in the *NV Energy Bordertown Substation to California Substation 120 kV Transmission Line Constraint and Opportunity Study* (Constraint Study) (JBR 2009a).

1.2.1 Project Area

The project area is located in Washoe County, Nevada, and Sierra County, California, west and northwest of the City of Reno, Nevada (**Figure 1.2-1**). The northern boundary of the project area is near Bordertown, Nevada, and U.S. Highway 395 and the southern boundary is near Interstate 80 between Verdi, Nevada, and Mogul, Nevada. The western boundary is approximately 3 miles west of and roughly parallel with the California State line and the eastern boundary extends to the Peavine area generally east of Peavine Peak.

1.2.2 Electrical System Overview

Key components of an electrical system include generation, transmission, voltage regulation, and distribution to consumers. Electricity is generated at power plants and distributed via overhead transmission lines to substations. Substations regulate or reduce the electric voltage to levels that can be conveyed to the customer through distribution lines. A graphic representation of the

electrical distribution system that provides customers in Verdi and west Reno with power is displayed on **Figure 1.2-2**.

As **Figure 1.2-2** shows, bulk power is generated at the Tracy Power Plant and from other sources transmitted from northern California. Bulk power is distributed to various substations in Reno as 345 kilovolt (kV) energy via overhead transmission lines, such as the Alturas 345 kV transmission line. Bulk power serving customers in west Reno is reduced to 120 kV energy at the North Valley Road Substation, which is located in north-central Reno. The #141 and #142 120 kV transmission lines are used to distribute the 120 kV energy between the North Valley Road Substation and the Northwest and Reno substations, respectively.

1.3 PURPOSE AND NEED FOR ACTION

Under the Council on Environmental Quality (CEQ) Code of Federal Regulations (CFR) for NEPA (40 CFR Section 1502.13), an EIS must identify the underlying purpose and need to which the lead agency is responding to in proposing the action and alternative actions.

The purpose of the project is to provide reliable bulk transmission capacity to West Reno consistent with North American Electric Reliability Corporation (NERC) Standard TPL-003-0. Load growth in the Reno area, particularly on the west side has created bulk electrical transmission problems. Currently, almost all of the bulk power serving the electric load in the West Reno/Verdi area is transmitted from the North Valley Road Substation on the 120 kV #141 (turns into the #114 line) and #142 (turns into the #106 line) transmission lines. Energy demand in the West Reno/Verdi area during peak load periods can push beyond the transmission capacity limits of these existing lines. Should concurrent failure of the #141 and #142 transmission lines occur, load growth in the West Reno/Verdi area has increased the risk of an overload of the remaining 120 kV lines in the system, which could trigger a cascading failure.

The NERC establishes reliability standards for bulk power systems and has the legal authority to enforce reliability standards with all users, owners, and operators[1]. Compliance with NERC standards are mandatory, and the Federal Energy Regulatory Commission (FERC) may assess substantial civil penalties for violations of NERC standards. NERC Standard TPL-003-0 (NERC 2005) requires NV Energy to plan, operate, and maintain their bulk energy transmission system so that it can survive an event that causes concurrent failure of two system elements. The standard applicable to the Bordertown to California 120 kV Transmission Line Project is that the system must be able to survive an event that causes concurrent failure of two system elements with no loss of load, no overloads, and no voltage changes greater than five percent.

[1] NERC's mission is to ensure the reliability of the North American bulk power system. NERC is certified by the Federal Energy Regulatory Commission (FERC) to establish and enforce reliability standards for bulk power systems.

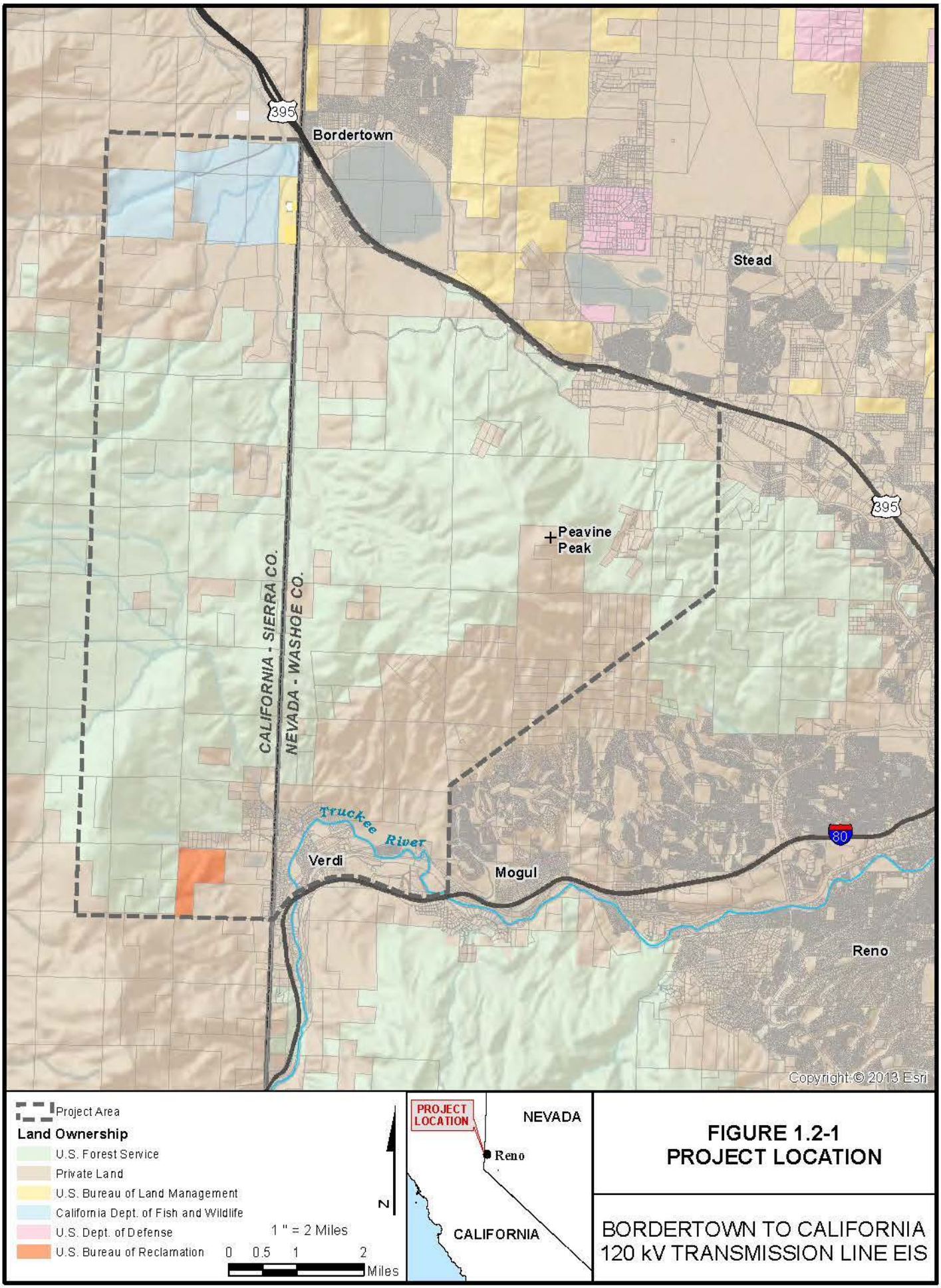


FIGURE 1.2-1
PROJECT LOCATION

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

To meet the NERC reliability standards, NV Energy needs redundancy in the 120 kV system that supplies bulk power to the West Reno/Verdi area. An alternate transmission route to the West Reno/Verdi area is needed that does not solely rely on the #141 and #142 transmission lines. The need for the project was illustrated during the summer of 2007 when the electric load for the area reached 141 megawatts (MW). During the same period, the electric load in North Tahoe was 57 MW, requiring a total of 198 MW of load. This load was served primarily by the #141 and #142 transmission lines because these were the only lines that supply bulk energy to the area. If these lines had failed, the remaining lines in the 120 kV system would have overloaded, resulting in an uncontrolled cascading failure, a clear violation of NERC Standard TPL-003-0. Every year since 2007, NV Energy has identified bulk electrical transmission reliability problems on the west side of Reno.

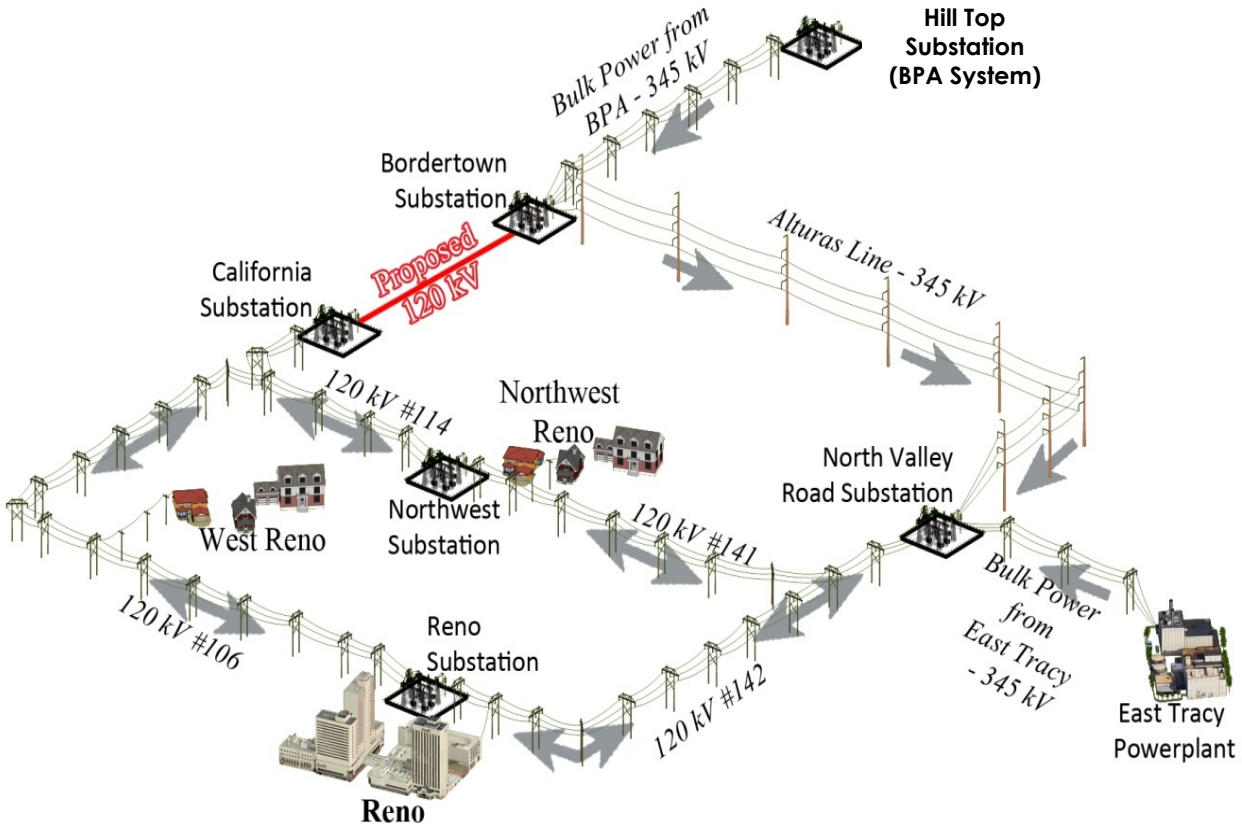


Figure 1.2-2 Transmission System Overview

In 2012, the USFS directed Electrical Consultants, Inc. to serve as an independent, third-party and evaluate the purpose and need for the project and determine if the project is needed to address load growth in west Reno. The evaluation modeled load demand on the #141 and #142 transmission lines. Electrical Consultants, Inc. confirmed that the project is needed and also asserted that there is a greater need for the project today than when it was originally proposed.

Electrical Consultants, Inc. identified potential violations of both NERC TPL-003-0 and TPL-002-0 for the existing system in Reno without the construction of the project.

1.4 PROPOSED PROJECT

The primary components of the project include:

- Construction, operation, and maintenance of a 120 kV overhead transmission line between the existing Bordertown and California substations in Sierra County, California;
- Expansion of the Bordertown Substation facility; and
- Widening existing roads and construction of new temporary access roads needed for installation and maintenance of the transmission line.

1.5 DECISION FRAMEWORK

The project area contains NFS land, BLM-administered public land, and private land. The responsible official(s) will review the alternatives and environmental consequences in this EIS and make the following decisions only on NFS land and BLM-administered public land:

- To select a ROW and authorize the construction, operation and maintenance of a 120kV power transmission line across NFS land and expansion of the Bordertown Substation located on BLM-administered public land. Project design features, mitigation measures, and monitoring would be required to reduce effects to NFS land and BLM-administered public land and to restore areas disturbed during construction of the transmission line. A temporary SUP would be issued for temporary roads outside of the transmission line ROW that are needed for construction access on NFS land.
- Not select a transmission line corridor and not issue a permit.

1.6 MANAGEMENT DIRECTION

1.6.1 U.S. Forest Service

Detailed direction for the special uses proposal, application, and authorization process for occupancy and use of NFS land is provided in Chapter 10 of Forest Service Handbook (FSH) 2709.11. According to FSH 2709.11, "the objectives of the special uses application and authorization process are to:

- Provide timely responses to proponents and applicants requesting use of National Forest System lands.
- Provide a consistent decision making process for special use applications.
- Ensure that authorizations to use and occupy National Forest System lands are in the public interest (36 CFR part 251, Subpart B).
- Ensure that authorizations to use and occupy National Forest System lands comply with Forest land and resource management plans."

The National Forest Management Act of 1976 (NFMA), codified in Title 16 of the United States Code (USC) sections 1600 through 1614 (16 USC 1600 et seq.), is the primary statute governing the administration and planning of NFS land. The NFMA requires the USFS to prepare management plans for all NFS land using a systematic and interdisciplinary approach to resource management.

The Toiyabe Forest Plan, as amended (Forest Plan) (USFS 1986) provides forest-wide standards and guidelines for the management of NFS land within the project area. The standards and guidelines for Special Uses that are applicable to the project are listed below.

> 4- Manage all utility, road, and transmission corridors in accordance with plans and permits issued for their construction and use. When applications for utility ROW are received, the first priority will be to utilize existing corridors.
>
> 5- An environmental analysis will be required prior to adding new facilities to existing corridors. The integrity of visual quality for the corridor will be maintained to the highest standard to minimize adverse resource and environmental impacts. Any new utility corridor not identified in this Plan will be handled through the NEPA process.
>
> 6- National Forest System land will not be available for uses that can be accommodated on private land.
>
> 13- Utility lines generally will be buried if necessary to meet visual quality objectives. Exceptions to underground utility lines will be allowed where technological, economic, or resource protection requirements indicate that such lines should be overhead.

1.6.2 Bureau of Land Management

Approximately 8.1 acres of the project would occur on BLM-administered public land and managed in accordance with the Eagle Lake Resource Management Plan (RMP) (BLM 2008b). The RMP has a stated goal for ROW management:

Manage public lands to support the goals and objectives of all resource programs and respond to public requests for land use authorizations. Conduct ROW transactions, decisions, and actions in a manner that would prevent adverse impacts to scenic, ecological, water, air, scientific, and archaeological or historical values.

Where the project occurs on BLM-administered public land, applicable management direction in the RMP includes the following:

- New ROWs would be located within or adjacent to existing ROWs, to the extent that is practicable, in order to minimize adverse environmental impacts;
- Future BLM-granted ROWs, including utility corridors would be consistent with U.S. Fish and Wildlife Service (USFWS) guidance to minimize effects to migratory birds; and
- Use of the Alturas transmission line route (along U.S. Highway 395) for future ROW development.

1.7 PUBLIC INVOLVEMENT

A Notice of Intent (NOI) to prepare an EIS was published in the *Federal Register* on November 21, 2011 (*Federal Register* Volume 76, Number 224). A scoping notice describing the project was mailed to residents and interested parties on November 14, 2011, and February 2, 2012. The second mailing was needed to inform residents near the California Substation who were inadvertently missed during the November mailing. To gain further participation from the public the USFS hosted three public meetings December 6, 2011 in Cold Springs, Nevada, and December 8, 2011, and February 23, 2012, in Verdi, Nevada. In total, 60 people signed in at one

of the three scoping meetings. In addition, presentations were made to the following groups: North Valleys Citizen Advisory Board (7/11/11 and 1/9/12), Verdi Township Citizen Advisory Board (7/21/11 and 1/5/12), Ward 5 Northwest Neighborhood Advisory Board (11/14/11), Ward 4 North Valleys and Northeast Neighborhood Advisory Board (11/11/11), Reno City Council (11/16/11), Washoe County Commission (12/13/11), and Sierra County Board of Supervisors (8/16/11).

Public notification of the Proposed Action was posted on the Humboldt-Toiyabe National Forest Schedule of Proposed Actions website, starting November 21, 2011, at http://www.fs.usda.gov/goto/htnf/bordertownline. Objection procedures are contained in 36 CFR 219 Subpart B (see 219.52(a)).

1.8 ISSUES TO BE ADDRESSED IN THE EIS

Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues to address. Issues are defined as a point of disagreement, debate, or dispute about the proposed action based upon the effects of that action. These issues are separated into two groups, "key issues" and "non-key issues." Key issues were defined as those directly or indirectly caused by implementing the proposed action and are used to formulate alternatives or prescribe mitigation measures or monitoring requirements. Non-key issues were identified as those: (1) outside the scope of the proposed action; (2) already decided by law, regulation, Forest Plan, or other higher level decision; (3) irrelevant to the decision to be made; or, (4) conjectural and not supported by scientific or factual evidence.

Key and non key issues were addressed three ways: (1) developing an alternative to alter resource tradeoffs; (2) requiring mitigation to reduce impacts to a resource; and, (3) disclosing and comparing the relative difference in resource effects between alternatives. One or more of these methods may be used to address an issue.

The following three key issues were identified during scoping for this project and are addressed in **Chapter 3**.

Visual Resource Issue: Transmission line power poles and conductor wires may reduce the existing scenic quality in the proposed ROW/easement and interrupt the scenic integrity of the viewshed.

a. Issue measured by: Conformity with the USFS Visual Quality Objectives (VQOs) based on visual simulations from key observation points (KOPs).

Private Property Value Issue: The presence of a new transmission line adjacent to or crossing private land may reduce private property values.

a. Issue measured by: Acres of private property adjacent to or within the proposed transmission line ROW/easement.

b. Issue measured by: Estimated depreciation of property value.

Public Health and Safety Issue: A new transmission line could increase electromagnetic fields that may affect the health and safety of children at Verdi Elementary School and the public living in rural communities of Verdi, Long Valley, and North Virginia Street.

a. Issue measured by: Measurements of electric field and magnetic field at specific locations.

The following non-key issues were identified during scoping and brought forward to disclose the analysis to the public:

- Risk of wildland fire;
- Unauthorized off-highway vehicle (OHV) use;
- Effects to vegetation;
- Effects to forest product resources;
- Noxious and invasive weed infestations;
- Effects to rare plants;
- Effects to wildlife;
- Effects to watershed resources (soil erosion and streams);
- Effects to air quality; and
- Effects to cultural resources.

1.9 APPLICABLE PERMITS

Table 1.9-1 Permits and Licenses that May Be Applicable to the Project

ACTION	PERMIT/ APPROVAL	APPROVING AGENCY
ROW/Easement	Special Use Permit	USFS
ROW/Easement	Right-of-Way Grant	BLM
Dredge or fill activities in Waters of the United States. (i.e., construction of a road crossing.)	Clean Water Act, Section 404 Permit, Nationwide Permit	U.S. Army Corps of Engineers
Facilities construction	Construction Permit	Nevada Division of Environmental Protection, Bureau of Air Pollution Control
Facilities construction	Clean Water Act, Section 402 National Pollutant Discharge Elimination System (NPDES) Notification for Stormwater Management during Construction	Nevada Division of Environmental Protection
Facilities construction	Clean Water Act, Section 402 NPDES Notification for General Permit for Discharges of Storm Water Associated with Construction Activity	Lahontan Regional Water Quality Control Board
Clean Water Act 404 permit	Clean Water Act, Section 401 Water Quality Certification	Nevada Division of Environmental Protection
Tree removal and vegetation management activities	R6T-2009-0029 Timber Waiver	Lahontan Regional Water Quality Control Board
Tree removal in California	Public Agency, Public and Private Utility Right of Way Exemption (waives requirement to prepare a Timber Harvest Plan)	California Department of Forestry and Fire Protection (CAL FIRE)
Surface disturbing activities	Surface Area Disturbance Permit and Dust Control Permit	Nevada Division of Environmental Protection
ROW/Land Use/Facilities Construction	Encroachment Permit/Special Use Permit	Sierra County Planning Commission
ROW/Easement	Special Use Permit	Washoe County Board of Commissioners
ROW/Easement	Plan Amendment	Truckee Meadows Regional Planning Agency
ROW/Easement	Special Use Permit	City of Reno

CHAPTER 2 ALTERNATIVES

2.1 INTRODUCTION

This chapter describes five alternatives included for detailed analysis in this EIS. A discussion of the alternatives that were eliminated from detailed study is also provided in this chapter.

2.1.1 Development of Alternatives

The Stateline Alternative was originally identified as the Proposed Action for this project. This alternative is no longer feasible and was eliminated from detailed study for the reasons provided in **Section 2.10.1**. The alternatives considered for analysis are shown in **Figure 2.1-1** and include:

- No Action Alternative;
- Mitchell Alternative;
- Peavine Alternative;
- Poeville Alternative; and
- Peavine/Poeville Alternative.

Mitchell and Peavine Alternatives were developed from routes evaluated in the Constraint Study (JBR 2009a). The Mitchell Alternative maximizes routing next to the existing #102 transmission line. The Mitchell Alternative was revised after dismissal of the Stateline Alternative to avoid routing on the portion of the Stateline Alternative that was no longer feasible. The Peavine Alternative maximizes routing across land previously disturbed by wildland fire and minimizes crossing pine forest communities. The Poeville Alternative was developed by the USFS interdisciplinary team in order to maximize compliance with management goals and directives of the Forest Plan. The Poeville Alternative utilizes existing utility corridors and minimizes routing on NFS land. The Peavine/Poeville Alternative was developed in response to public comments to reduce impacts of the Peavine Alternative to the viewshed of private property near the California Substation, and to use existing utility corridors.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, a SUP for the construction, operation, and maintenance of an overhead transmission line and 90-foot-wide ROW across NFS land would not be issued to NV Energy. Project activities and associated environmental impacts on NFS land, BLM-administered public land, and private land would not occur. The existing 120 kV system would continue to rely on the #141 and #142 transmission lines for transmitting electric load to the West Reno/Verdi area in the foreseeable future. The No Action Alternative does not provide the redundancy needed in the system and therefore would not meet the purpose and need for the project.

2.3 ACTION ALTERNATIVES

The Mitchell, Peavine, Poeville, and Peavine/Poeville Alternatives were selected as action alternatives to be considered for detailed analysis. The differences between the action alternatives are the location of the proposed 90-foot-wide ROW/easement and the location of

construction access roads, including road widening. The project facilities and substation modifications would be constructed, operated, and maintained under any of the action alternatives. Construction activities, equipment, and materials would apply to all the action alternatives. The number of pole structures and sites, staging areas, access roads, and transmission wire setup sites required during construction would vary by length and location of each alternative. A detailed description of each action alternative is provided in **Sections 2.4** through **2.7** and displayed on **Figures 2.1-1** through **2.1-3**.

If an action alternative is selected in the Record of Decision (ROD), NV Energy would prepare a Construction, Operation, and Maintenance (COM) Plan. The COM Plan is a comprehensive guide used during construction, as well as for operation and maintenance of the project. The COM Plan would include key project contacts; maps of the alignment and ancillary facilities; access maps, copies of permits and associated permit conditions; and specific implementation plans for restoration (including habitat restoration), fire prevention, emergency response, protection of cultural resources, protection of sensitive species, protection of wetlands and streams, stormwater pollution prevention; fencing, and weed management.

2.3.1 Proposed Substation Modifications

The Bordertown Substation would be partially rebuilt and modified with the addition of new components in order to accommodate the transmission line. The Bordertown Substation would be expanded by 3.7 acres on BLM-administered public land. Proposed modifications to the Bordertown Substation would include vegetation clearing and grading, and expansion of the existing chain-link fence for security and to restrict unauthorized persons and wildlife from entering (**Appendix A**). The site would be finish-graded and surfaced with gravel. Noxious weeds would be treated and monitored to prevent spreading onto adjacent land.

The California Substation is located on private land owned by NV Energy. All needed modifications at the California Substation would be accommodated within the existing fenced area of the substation, and the footprint of the existing substation would not be expanded. The exact layout of the modifications at the California Substation would depend on the selected alternative. A preliminary plan showing the modifications proposed for the California Substation is provided in **Appendix A**.

2.3.2 Proposed Transmission Line

The proposed 120 kV transmission line would consist of bundled aluminum conductor steel-reinforced cable supported on single circuit pole structures. A combination of single-pole structures, two-pole H-frame structures, and three-pole dead end/angle structures would be used. Single-pole structures would be used less frequently where confined space prevents the use of two-pole H-frame or three-pole dead end/angle structures, which are wider than the single-pole structures. The span distance between the poles would average 800 feet but could range from 200 feet to 2,000 feet depending on terrain or obstructions. See **Appendix A** for an illustration and detailed description of each type of proposed pole structure.

Bordertown Substation
Silver Lake Substation
California Substation
Northwest Substation
North Valley Road Substation
Valley Road Substation
Washoe Substation
Mitchell Alternative
Peavine Alternative
Poeville Alternative
Peavine/Poeville Alternative
Peavine Peak
Summit One
Alturas Line
#141 Line
#102 Line
#101 Line
#106 Line
#114 Line
#114 Line (Underground)
#142 Line
#632 Line
395
80
651
Bus 395
Long Valley Road
Dog Valley Road
Dog Valley
Peavine Road
Peavine Peak Road
Bull Ranch Road
Somersett Parkway
Hennass Pass Road
Truckee River
CALIFORNIA - SIERRA CO.
NEVADA - WASHOE CO.

Transmission Line Alternatives
- Mitchell
- Peavine
- Poeville
- Peavine/Poeville

Existing Features
- 120 kV Transmission Line
- 345 kV Transmission Line
- 60 kV Transmission Line
- Existing Transmission Line Corridors (TMRPA, 2012)
- Substation
- Railroads

NFS Roads
- NFS Roads
- NFS Motorcycles Only
- Public and Private Road

Land Ownership
- U.S. Forest Service
- Private Land
- U.S. Bureau of Land Management
- California Dept. of Fish and Wildlife
- U.S. Dept. of Defense
- U.S. Bureau of Reclamation

Note: Segments of transmission line alternatives that appear parallel share the same alignment. Transmission lines are offset for visual purposes only.

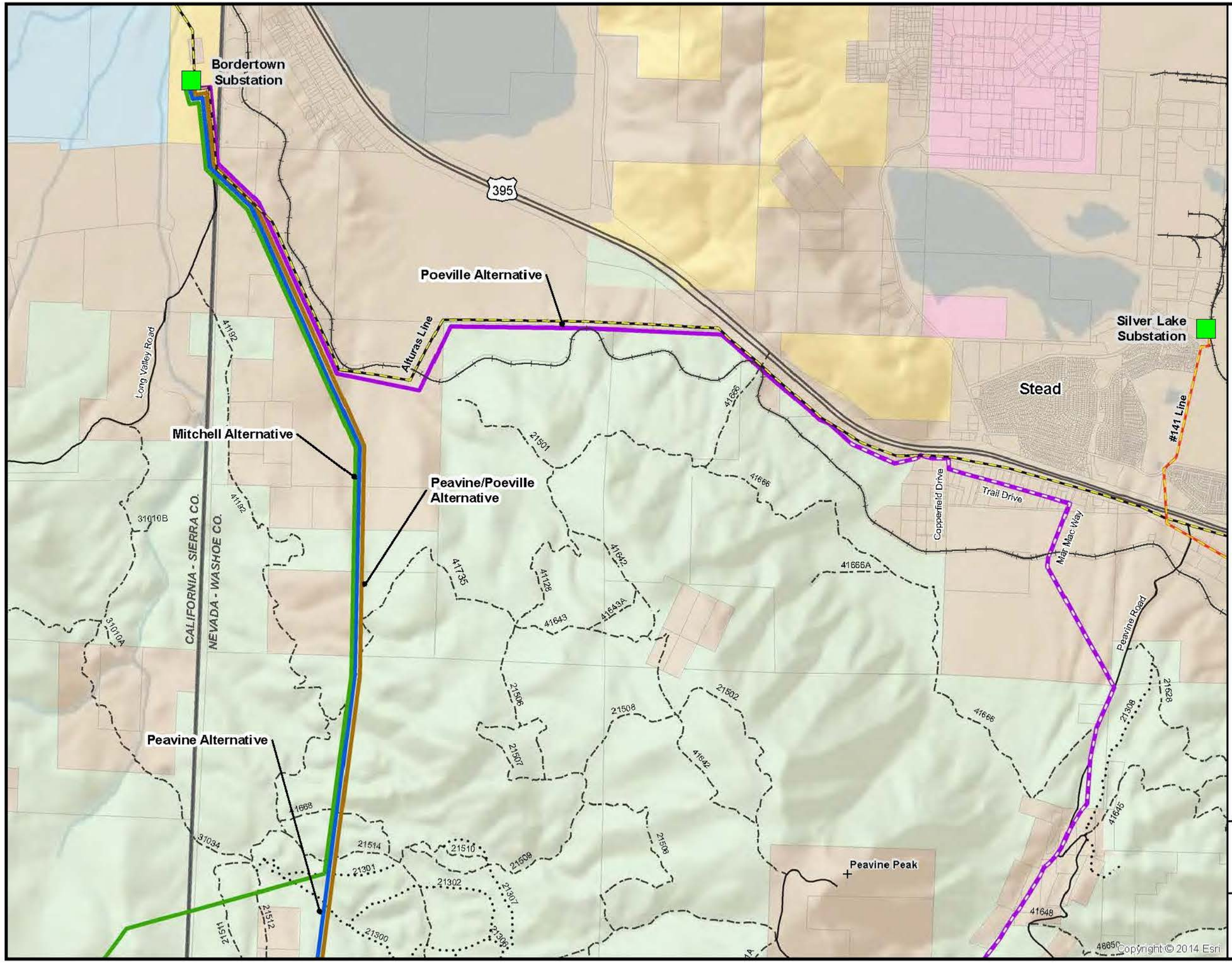
N

1 " = 6,000 feet

0 3,000 6,000 12,000 Feet

FIGURE 2.1-1
OVERVIEW OF ALTERNATIVES CONSIDERED

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS



Existing Features

- 120 kV Transmission Line
- 345 kV Transmission Line
- Substation

NFS Roads

- NFS Roads
- NFS Motorcycles Only
- Public and Private Road

Land Ownership

- U.S. Forest Service
- Private Land
- U.S. Bureau of Land Management
- California Dept. of Fish and Wildlife
- U.S. Dept. of Defense

Note: Segments of transmission line alternatives that appear parallel share the same alignment. Transmission lines are offset for visual purposes only.

N

1 " = 3,000 feet

0 1,500 3,000 6,000 Feet

FIGURE 2.1-2
OVERVIEW OF ALTERNATIVES CONSIDERED IN DETAIL NORTH HALF

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

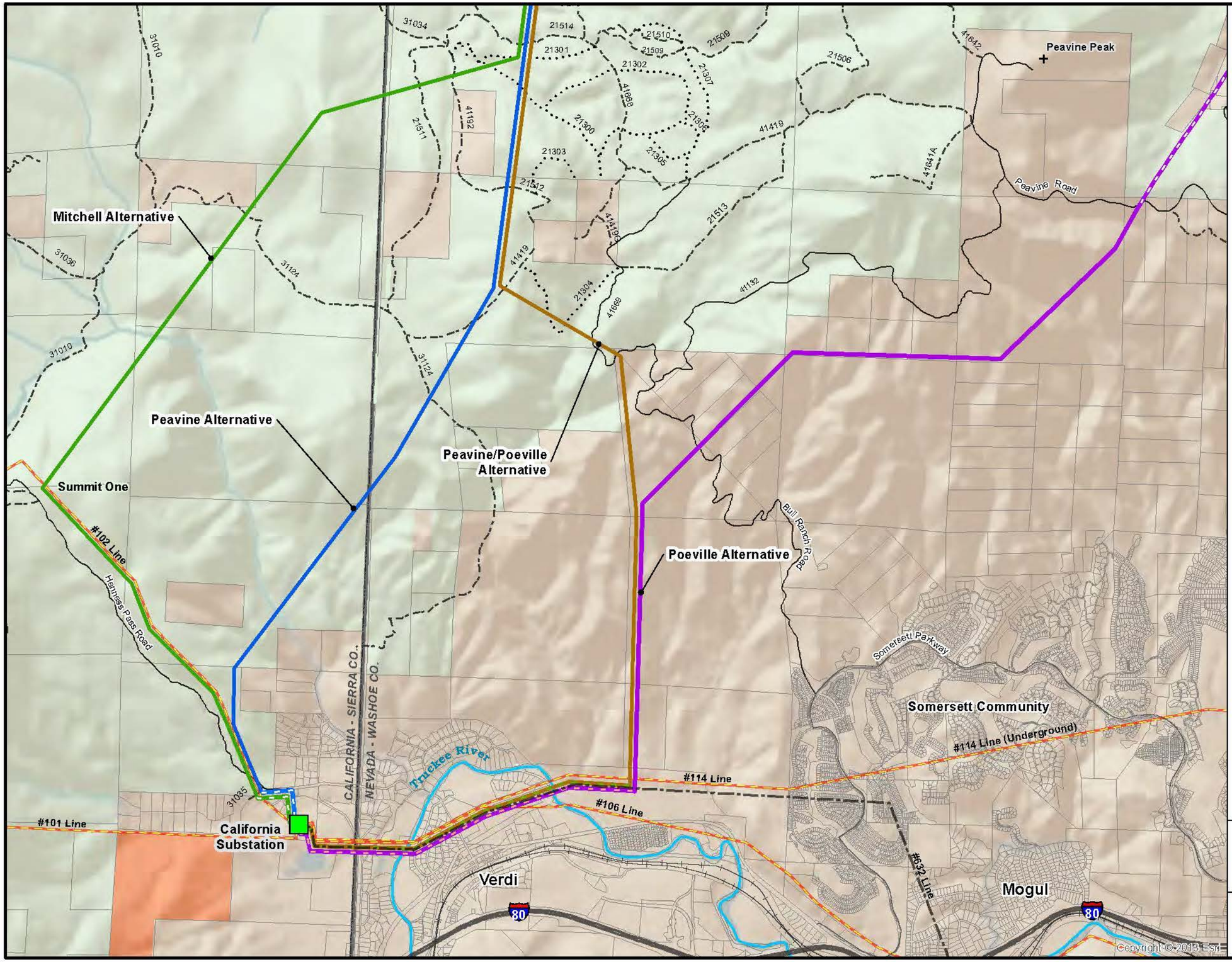


FIGURE 2.1-3
OVERVIEW OF ALTERNATIVES CONSIDERED IN DETAIL SOUTH HALF

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

2.3.2.1 Transmission Line Construction

Construction of the transmission line would consist of the establishment of staging areas, the construction of access roads, including widening existing roads; the establishment of pole sites and transmission wire setup sites; the installation of the pole structures and conductor and shield wires. Vegetation would be cleared, as needed. **Table 2.3-1** provides the area of ground disturbance of each construction activity. The exact location of these project elements would be determined prior to construction. See POD (JBR 2009b) for a detailed description of power pole assembly, wire stringing, and equipment.

Staging Areas

Up to four staging areas may be needed to store construction materials, equipment, tools, fuel, service trucks, spare parts, and vehicles. The staging areas would house portable, self-contained toilets and possibly portable offices or serve as equipment maintenance areas. Staging areas would measure approximately 500 feet in length by 500 feet in width. Staging areas may be located on BLM-administered public land or private land, but no staging areas would be located on NFS land. Any hazardous materials such as fuel, lubricants, and solvents, would be handled and stored in accordance with applicable regulations, including 40 CFR 262. Handling, storage, and clean-up of hazardous materials at staging areas would be described in a Spill Prevention, Control and Countermeasures (SPCC) Plan, which would be included as part of the COM Plan. Staging areas would include secondary containment to capture and contain any potential spills or leaks.

Construction Access

Existing Roads

Existing roads would be used for construction and maintenance access as much as possible. Roads would be widened up to 30 feet, including cut and fill slopes to accommodate construction equipment. Roads that would be widened include designated NFS roads (i.e., roads shown on the Carson District Motor Vehicle Use Map [MVUM]) and non-system roads. Roads wide enough that do not require widening may need blading or installation of erosion control measures. Road improvements would comply with: 1) The Forest Service National Supplements to the FP-03 (USFS 2010c); 2) the USFS Road Construction Handbooks (FSH 7709.56 and FSH 7709.57); and, 3) the Forest Plan. Several designated NFS roads have seasonal use restrictions from April 1 to November 18 that would be followed during construction. All designated NFS roads widened for construction or maintenance access would be restored to the original roadbed. A description of restoration activities that would be performed following construction and maintenance activities is provided in **Section 2.3.3.3**.

New Access Roads

New access roads (i.e., centerline travel road and spur roads) would be constructed to pole sites, transmission wire setup sites, and staging areas when there are no existing roads available. Access roads would be 30 feet wide and located within the 300- to 600-foot-wide corridor (variable-width corridor). The variable-width corridor would be centered on the transmission line and would measure 300 feet wide where slopes are 10 percent or less, and 600 feet wide where slopes are greater than 10 percent. Roads would be constructed primarily by mowing or

masticating vegetation in a manner that leaves root systems intact to encourage regrowth and minimize soil erosion. Whole tree removal would be required where new access roads cross forested areas. Rocks or other obstructions would be bladed. If rocks cannot be removed with heavy equipment, explosives may be used. While new access roads wider than 30 feet would not be expected, occasional widening beyond 30 feet may be necessary in areas where extensive blading and side cuts are required. Erosion and sediment controls would be installed as identified in the project Storm Water Pollution Prevention Plan (SWPPP), which would be included as part of the COM Plan.

After construction, all temporary access roads would be re-contoured and stabilized by seeding and installing erosion control features such as water bars. Where deemed appropriate by the USFS, roads near sensitive resources may not be re-contoured in order to avoid inadvertent disturbance to resources. Barriers would be installed on all restored access roads located on NFS land to prevent unauthorized vehicle use. If future road access is needed for maintenance of the transmission line and depending upon the level of proposed new disturbance or the change in environmental conditions, a review of the sufficiency of the existing NEPA analysis would be made.

Stream Crossings

Road construction across perennial streams would be avoided. Where improvements are needed to cross ephemeral and intermittent streams, the side slopes of drainages would be reduced to a slope that would allow safe vehicle travel, and the slopes and drainage bottom would be rock armored. Once construction is complete, all drainage modifications would be re-contoured and seeded based on existing site conditions.

Power Pole Structures

Pole Sites

A pole site is the area needed for the construction and installation of the pole structure, and would be 0.5 to 1 acre in size depending on the type of pole structure. Clearing of vegetation at pole sites would be limited to the area excavated for the installation of the pole structures. Pole sites in steeper terrain (greater than 10 to 12 percent slopes) would be graded level for safe operation of equipment. Equipment pads would not be re-contoured, but reseeded so that the pad would be available for future maintenance of the pole.

Excavation and Pole Foundations

Excavation for poles set directly into the ground with no foundation would be approximately 3 feet in diameter and approximately 10 to 13 feet deep. Three-pole dead-end/angle poles would be secured (guyed) by anchors installed in the ground approximately 60 feet from the pole base. The anchors would require excavating a hole approximately 3 feet in diameter and 15 feet deep. A truck-mounted power auger is the preferred method of excavation. However, backhoe excavation and blasting may be used as alternative excavation methods as geological and site conditions require. Poles that would be set in the ground without a foundation would be backfilled with native or imported fill material. Final pole foundation requirements would be determined after design and permitting requirements are completed.

In places where guying three-pole dead-end/angle poles would not be feasible, self-supporting steel angle poles on foundations would be installed. Concrete foundations, where needed, would be cast-in-place and dimensions would vary from 12 to 40 feet below ground surface and 3 to 12 feet in diameter. Waste water from wash-out stations would be captured for removal from NFS land to prevent any waste water from discharging off-site and into any surface waters. Should rocky areas be encountered, foundation holes may be excavated using rock drills. Topsoil removed from foundation holes would be separated and stockpiled at the edge of active work areas to salvage the seed bank. All excavations would be covered and temporarily fenced during weekends, holidays, night hours, or to protect the public and wildlife from injury.

Power Pole Assembly

Materials, including the transmission poles, insulators, guy wire anchors, and all other associated hardware, would be delivered from staging areas to each of the pole sites. Assembly crews would build the structure and then attach insulators, travelers, and hardware to assemble a complete structural unit. Erection crews would follow and place the completed poles into the excavated holes using a large mobile crane or helicopter. Equipment pads would be established at the pole sites, where necessary, to support the equipment for the crew to erect the pole. Native soils previously excavated, imported backfill, and/or concrete would be placed around each pole and properly compacted. Guy wires to support the angle poles would be used to plumb the structure. Signs, flagging, or other readily visible marking would be used to indicate the presence of guy wires. Where self-supporting steel angle poles are required, anchor bolts would be used to secure the pole structure to the poured concrete foundation.

Transmission Wire Setup Sites:

Conductor and shield wire installation would be performed from transmission wire setup sites. Transmission wire setup sites would be up to 600 feet in radius. Six to 16 wire setup sites may be needed. The number of sites is a function of wire reel span lengths and engineering requirements for conductor sagging.

Construction-Related Ground Disturbance

Most ground disturbance would be temporary and would be restored following construction. Other disturbance would be permanent, such as pole structure footings at each pole site. **Table 2.3-1** shows the average ground disturbance for each of the primary construction activities or areas.

Table 2.3-1 Temporary Ground Disturbance Required for Project Construction

CONSTRUCTION ACTIVITY OR AREA	APPROXIMATE CONSTRUCTION DIMENSIONS/DISTURBANCE	ESTIMATED NUMBER
Pole Structures: Single pole Two-pole H-frame Three-pole dead-end/angle	 85-foot radius (+/- 0.5 acre) 85-foot radius (+/- 0.5 acre) 120-foot radius (+/- 1.0 acre)	Span distance would average 800 feet but could range from 200 to 2,000 feet depending on terrain or obstructions
Transmission wire setup sites	Approximately 600 feet radius (+/- 26.0 acres)	6 to16 sites but would vary by alternative (see Sections 2.4 through 2.7)
Staging areas	500 feet long and wide (+/- 5.7 acres)	As many as 4 construction staging areas would be necessary
Widening existing roads	30-foot-wide (consisting of a traveled way measuring up to 14 feet wide plus any curve widening, turnouts, and side cut and fill slope areas)	Varies by alternative (see Sections 2.4 through 2.7)
New access roads (i.e., spur roads, centerline travel road, and cross country travel)	30-foot-wide (consisting of a traveled way measuring up to 14 feet wide plus any curve widening, turnouts, and side cut and fill slope areas)	Varies by alternative (see Sections 2.4 through 2.7)
Tree removal under transmission line (i.e., transmission line clearance area)	Within 90-foot ROW plus any tree outside the ROW that may have the potential to fall on the transmission line wire; Construction of log landings (+/- 0.5 acre) would create additional disturbance	Varies by alternative (see Chapter 3)

Vegetation Removal and Maintenance

Prior to construction, noxious weeds would be inventoried and treated within the ROW and areas within 100 feet of project ground disturbance. Treatment methods would include manual and mechanical methods and the use of herbicides. A five-gallon backpack sprayer would be the primary method of herbicide application, but large infestations may require a truck-mounted sprayer. The following herbicides would be used for treatments (brand/shelf name is parentheses): Aminopyralid (Milestone); Clopyralid (Transline); Chlorsulfuron (Telar); Glyphosate (Roundup and Rodeo); Imazapic (Plateau, which is not labeled for use in California); and Triclopyr (Garlon).

During construction, vegetation would be removed as needed at pole sites, staging areas, transmission wire setup sites, and access roads. Removal of vegetation would generally consist of mowing or masticating shrub and grass vegetation in a manner that leaves root systems intact to encourage growth and minimize soil erosion. In forested areas, whole trees would be removed using heavy equipment where terrain and slope stability permits and skidded to log landings for

disposal. In areas that are not accessible with equipment or with excessive slopes and highly erodible soils, trees would be removed by helicopter. All slash would be chipped and removed from NFS land.

Trees within the proposed transmission line ROW/easement would be removed as necessary for compliance with National Electric Safety Code (NESC), NERC standards, California Public Utilities Commission (CPUC) regulations, Nevada Administrative Code (NAC), California Public Resources Code, California Code of Regulations, and Department of Forestry Fire Prevention standards. The NESC standards and the California and Nevada codes require that obstructions be no closer than 21 feet to an overhead transmission line. **Figure 2.3-1** shows the typical tree clearance distances that would be required for compliance with the aforementioned codes and regulations.

2.3.2.2 Restoration of Construction-Related Activities

All construction access roads constructed on NFS land, including those determined to be necessary for project maintenance will be re-contoured and reclaimed. All existing authorized NFS roads and motorized trails that are widened for construction access would be reclaimed and returned to the original roadbed. Non-designated roads on NFS land that would be widened and used for construction access would be reclaimed and reseeded. Restoration would include re-contouring roads, installing erosion control features such as drain dips, ripping, chipping and seeding. Logs, branches, pine needles, brush, and rocks may be used to disguise the road for restoration purposes or other techniques approved by the USFS.

A detailed restoration plan would be included as part of the COM Plan for construction related ground disturbance, including disturbance associated with roads. The restoration plan would include re-vegetation success criteria based on USFS vegetation matrices and reference sites. Restoration success would be monitored until restoration is deemed successful by the USFS. Restoration seed mixes used on NFS land will be approved by the USFS. Restoration seed mixes will be certified as weed-free. The terms “reclamation” and “restoration” are used interchangeably throughout this EIS, as are the terms “reclaim” and “restore”.

2.3.2.3 Construction Schedule

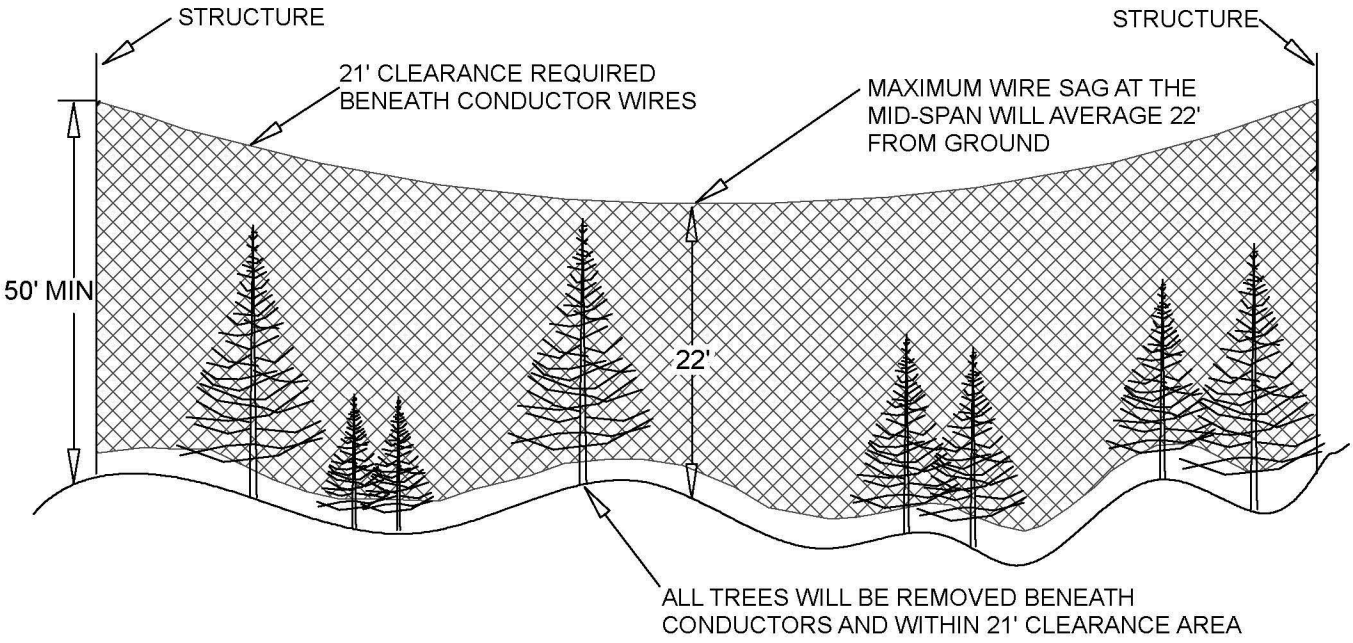
The project would commence as soon as all necessary agency approvals and permits are obtained (**Section 1.1**), and all ROW authorizations and easements are secured. Construction of the project would take 8 to 12 months. Near sensitive receptors (i.e., occupied residences), noise-generating activities (e.g., blasting) would be limited to Monday through Friday from 7:00 a.m. to 7:00 p.m. Otherwise, work may occur 12 hours per day any day of the week.

2.3.2.4 Construction Equipment and Vehicles

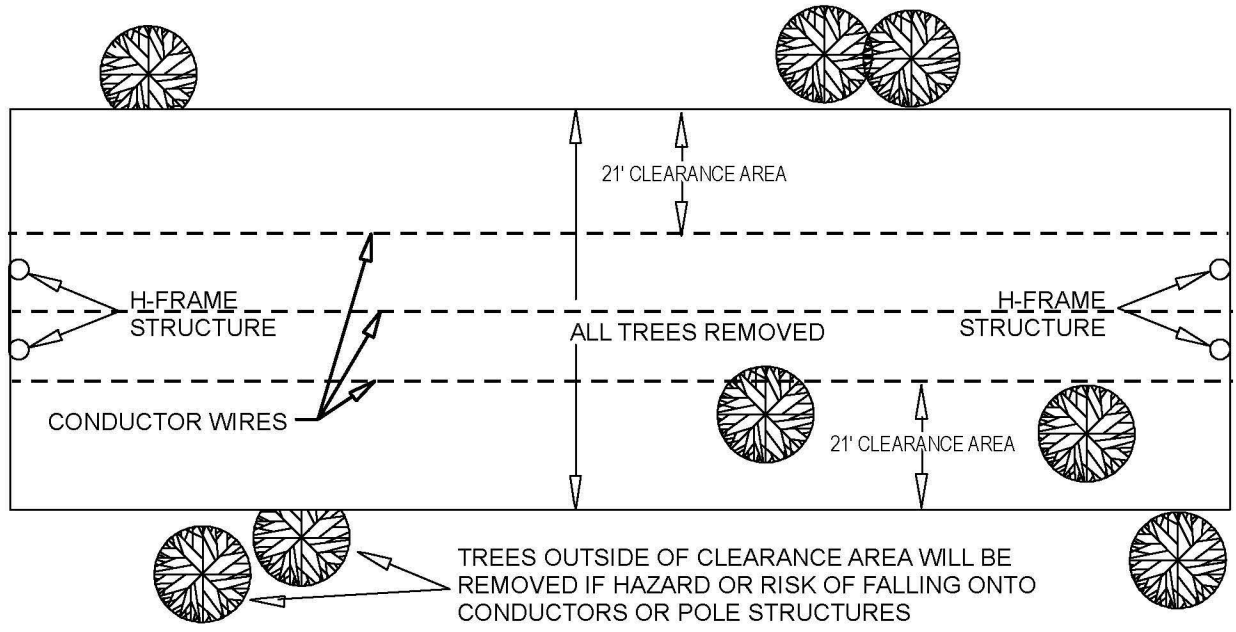
The typical equipment and vehicles that may be necessary are listed in **Table 2.3-2**. Use of equipment is dependent on site-specific conditions encountered. Likewise, **Table 2.3-2** does not list various power and hand tools that would likely be used for the project, such as hammers, sanders, wire cutters, and shovels.

Table 2.3-2 Typical Construction Equipment and Vehicles

EQUIPMENT	USE
¾-ton and 1-ton pickup trucks	Transport construction personnel
2-ton flat bed trucks; flat bed boom truck	Haul and unload materials
Rigging truck	Haul tools and equipment
Mechanic truck	Service and repair equipment
Aerial bucket trucks	Access poles, string conductor, and other uses
Shop vans	Store tools
Bulldozer	Grade access roads and pole sites and restoration
Road grader	Construct, maintain, and upgrade roads
Compactor	Construct access roads
Truck mounted digger or backhoe	Excavate
Crawler backhoe	Excavate
Small mobile cranes (12 tons)	Load and unload materials
Large mobile cranes (75 tons)	Erect poles
Transport	Haul poles and equipment
Drill rig with augers	Excavate and install fences
Puller and tensioner	Pull conductor and wire
Cable reel trainers	Transport cable reels and reed cables into conduit
Semi-tracker trailers	Haul poles and equipment
Splice trailer	Store splicing supplies and air condition manholes
Take-up trailers	Install conductor
Air compressors	Operate air tools
Air tampers	Compact soil around pole foundations
Concrete trucks	Pour concrete
Dump truck	Haul excavated materials and import weed-free backfill
Fuel and equipment fluid truck	Refuel and maintain vehicles
Water truck	Suppress dust and fire
Winch truck	Install and pull sock line and conductors into position
Fire tender	Haul water for fire suppression
Fire unit	Fire fighting vehicle
Large helicopter	Erect and haul poles
Small helicopter	Pull hardline
Rangeland drill	Sow seed
Hydroaxe or masticator	Chop shrubs and small diameter trees



SIDE VIEW



PLAN VIEW

FIGURE 2.3-1
TYPICAL TREE TRIMMING AND CLEARANCE DISTANCES

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

Source: NV Energy, 2013; Modified by JBR Consultants, Inc., 2014

2.3.3 Operation and Maintenance

The transmission line would be operated from the NV Energy Electrical Control Center in Reno, Nevada. NV Energy personnel at the Electrical Control Center would monitor voltage and power flow along the transmission line in accordance with standard operating procedures.

NV Energy would inspect the line annually to determine if maintenance is needed. Annual inspection would be made via helicopter or from the ground by walking to pole structures from existing roads. An inspection that involves climbing pole structures is anticipated once every 10 years. Access to the transmission line would be from existing roads using pickup trucks, an all-terrain vehicle or OHV, or by walking to the pole structure. The ROW would be patrolled after unexplained outages or significant natural incidents (such as fires, earthquakes, floods, torrential rains, avalanches, or extreme electrical storms) to observe facility conditions and the surrounding environment and to begin repairing any damages.

Trees that could interfere with the safe operation of the transmission line would be removed as needed. Tree and vegetation maintenance of the proposed transmission line would be done with a masticator or may be felled and lopped and scattered or chipped and broadcast onsite on a case-by-case basis, so that fuels do not build up along the corridor. Maintenance access would be by foot-travel, pickup truck, bucket truck, or OHV from the nearest designated NFS or maintenance road.

2.3.4 Design Features Common to All Action Alternatives

Project design features would be implemented during construction and maintenance to reduce environmental impacts. A list of design features that would be implemented under any of the action alternatives are contained in **Appendix B**.

2.4 MITCHELL ALTERNATIVE

The Mitchell Alternative would be approximately 11.7 miles long (**Figures 2.1-1**, **2.1-2**, and **2.1-3**). The first approximately 5.0 miles would be identical to the Peavine Alternative and generally parallels the California and Nevada State line, approximately 0.6 to 0.9 mile east of the state line. The last 0.4 mile of transmission line into the California Substation would utilize single pole structures with a distribution line under-build to accommodate the new transmission line and existing distribution line on the same poles. Approximately 4.6 miles of the Mitchell Alternative would be located adjacent to an existing power line corridor. **Table 2.4-1** summarizes land status and length of ROW within California and Nevada.

Table 2.4-1 ROW/Easement Requirements for the Mitchell Alternative

LAND OWNERSHIP/ ADMINISTRATION	MILES IN CALIFORNIA	MILES IN NEVADA	TOTAL MILES	PERCENT OF ROUTE	ACRES OF ROW/EASEMENT[1]
USFS	5.4	3.0	8.4	72	91.6
BLM	0.4	0.0	0.4	3	8.1
Private Land	0.6	2.3	2.9	25	31.6
Total	6.4	5.3	11.7	100	131.3

[1] Includes proposed expansion area associated with the Bordertown Substation

Approximately 11.1 miles of roads would be widened for construction access, as displayed on **Figure 2.4-1**. The associated acres of surface disturbance are presented in **Table 2.4-2**.

Table 2.4-2 Road Widening Required for the Mitchell Alternative

ROAD/ROUTE TYPE	WIDENING REQUIRED (MILES)	SURFACE DISTURBANCE (ACRES)[1]
Designated NFS Roads on NFS Land	5.6	14.4
Non-Designated Routes on NFS Land	1.1	2.7
Existing Roads Across Private Land	4.4	11.2
Total (Roads/Routes on All Land)	11.1	28.3

[1] Does not include existing road disturbance, which is assumed to be 9 feet wide.

The location of other temporary access roads would be determined prior to construction, but would be located within a 300- to 600-foot-wide corridor (variable-width corridor). Approximately 7.1 miles (25.8 acres) of new temporary centerline travel roads would be needed for construction of the Mitchell Alternative.

The design features that are specific to the Mitchell Alternative that would be implemented during construction and/or maintenance of the project are described in **Appendix B**: **Section 1.2.1**.

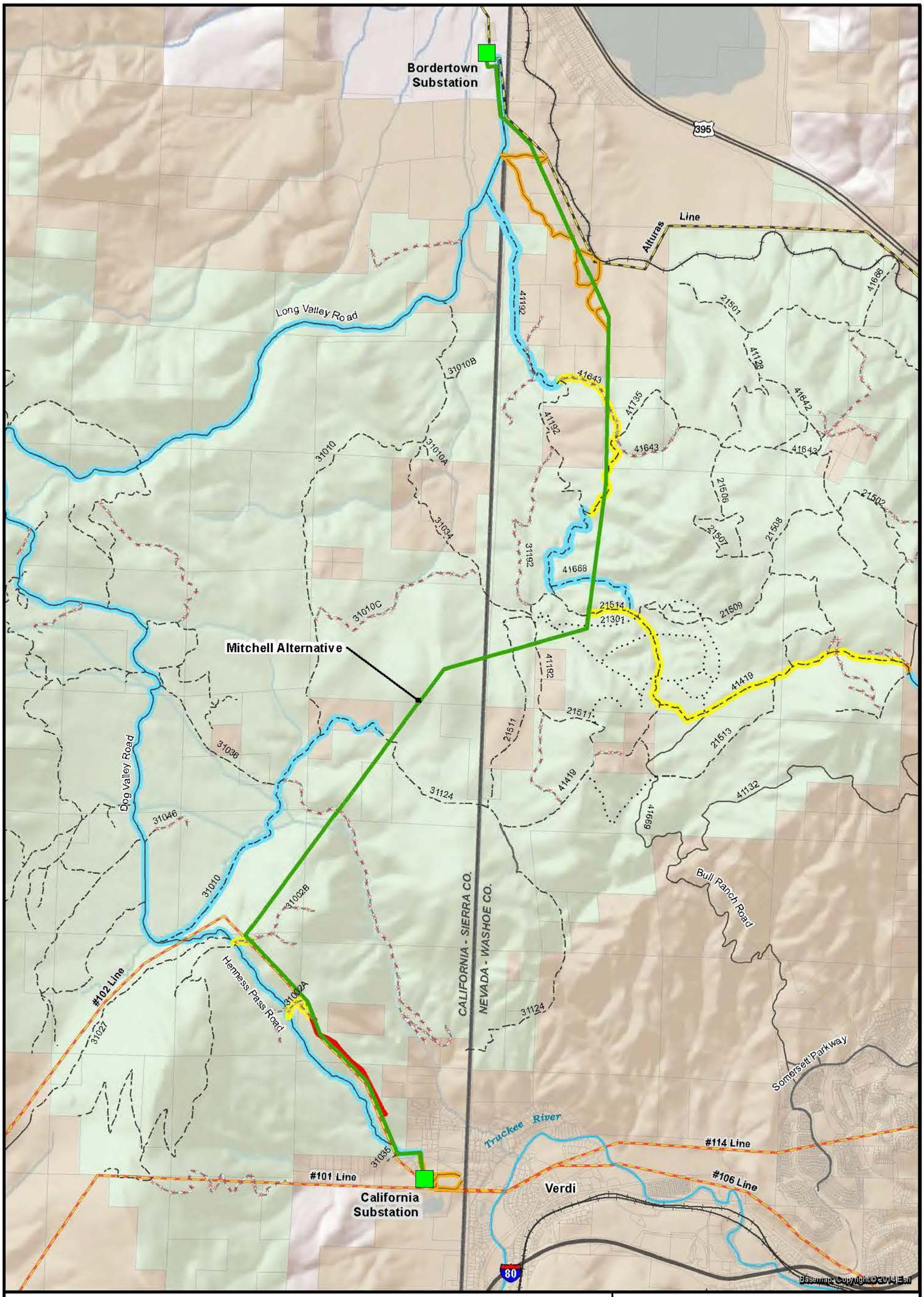


FIGURE 2.4-1
MITCHELL ALTERNATIVE: TEMPORARY ROAD IMPROVEMENTS

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

2.5 PEAVINE ALTERNATIVE

The Peavine Alternative would be approximately 10.3 miles long (**Figures 2.1-1**, **2.1-2**, and **2.1-3**). The first approximately 5.0 miles of the Peavine Alternative would be identical to the Mitchell Alternative. The Peavine Alternative generally parallels the California and Nevada state line, staying on the Nevada side by approximately 0.6 to 0.9 mile east of the California and Nevada state line. The last approximately 0.4 mile of the transmission line into the California Substation would be constructed on single pole structures as part of an under-build with an existing distribution line. Approximately 2.8 miles of the Peavine Alternative would be located adjacent to an existing power line corridor. **Table 2.5-1** summarizes land status and length of ROW in California and Nevada.

Table 2.5-1 ROW/Easement Requirements for the Peavine Alternative

LAND OWNERSHIP/ ADMINISTRATION	MILES IN CALIFORNIA	MILES IN NEVADA	TOTAL MILES	PERCENT OF ROUTE	ACRES OF ROW/EASEMENT[1]
USFS	2.1	4.9	7.0	68	76.4
BLM	0.4	0.0	0.4	4	8.1
Privately-owned land	0.6	2.3	2.9	28	31.6
Total	3.1	7.2	10.3	100	116.1

[1] Includes proposed expansion area associated with the Bordertown Substation

Approximately 20.8 miles of existing roads would be widened for construction access (**Figure 2.5-1**). Associated acres of surface disturbance are presented in **Table 2.5-2**.

Table 2.5-2 Road Widening Required for the Peavine Alternative

ROAD/ROUTE TYPE	WIDENING REQUIRED (MILES)	SURFACE DISTURBANCE (ACRES)[1]
Designated NFS Roads on NFS Land	10.0	25.5
Non-Designated Routes on NFS Land	1.4	3.5
Existing Roads Across Private Land	9.5	24.3
Total (Roads/Routes on All Land)	20.8	53.3

[1] Does not include existing road disturbance, which is assumed to be 9 feet wide.

Approximately 7.5 miles (27.3 acres) of new temporary centerline travel roads would be needed for construction of the Peavine Alternative.

The design features that are specific to the Peavine Alternative that would be implemented during construction and/or maintenance of the project are described in **Appendix B: Section 1.2.2**.

2.6 POEVILLE ALTERNATIVE

The Poeville Alternative would be approximately 18.0 miles long (**Figures 2.1-1**, **2.1-2**, and **2.1-3**). Beginning at the Bordertown Substation, this alternative would parallel the Alturas 345 kV transmission line for approximately 6.7 miles and then follow the existing distribution power line toward the top of Peavine Peak that serves the communication site on the peak. Construction of this section would consist of single pole structures with an under-build of the distribution line. East of Verdi, the Poeville Alternative would replace the existing, but currently inactive 60 kV #632 distribution line in its exact location, and parallel the existing #114 and #106 lines through Verdi to the California Substation. The existing #632 line H-frame pole structures would be replaced with new H-frame pole structures. Approximately 12.6 miles of the Poeville Alternative would be located adjacent to an existing power line corridor. **Table 2.6-1** summarizes land status and length of ROW in California and Nevada.

Table 2.6-1 ROW/Easement Requirements for the Poeville Alternative

LAND OWNERSHIP/ ADMINISTRATION	MILES IN CALIFORNIA	MILES IN NEVADA	TOTAL MILES	PERCENT OF TOTAL	ACRES OF ROW/EASEMENT[1]
USFS	0.0	3.8	3.8	21	44.7
BLM	0.4	0.0	0.4	2	8.1
Private Land	0.7	13.1	13.8	77	147.3
Total	1.1	16.9	18.0	100	200.1

[1] Includes proposed expansion area associated with the Bordertown Substation

Approximately 24.2 miles of existing roads would be widened for construction access, as displayed on **Figure 2.6-1**. The associated acres of surface disturbance are presented in **Table 2.6-2**. Approximately 5.4 miles (19.6 acres) of new temporary centerline travel roads would be needed for construction of the Poeville Alternative.

Table 2.6-2 Road Widening Required for the Poeville Alternative

ROAD/ROUTE TYPE	WIDENING REQUIRED (MILES)	SURFACE DISTURBANCE (ACRES)[1]
Designated NFS Roads on NFS Land	1.8	4.5
Non-Designated Routes on NFS Land	0.9	2.4
Existing Roads Across Private Land	21.5	55.1
Total (Roads/Routes on All Land)	24.2	62.0

[1] Does not include existing road disturbance, which is assumed to be 9 feet wide.

The design features that are specific to the Poeville Alternative that would be implemented during construction and/or maintenance of the project are described in **Appendix B: Section 1.2.3**.

Bordertown Substation

395

Alturas Line

41992

21501

41666

Long Valley Road

31010B

41643

41735

41642F

41492

41643

31010A

31010

21506

21502

31034

31182

21507

21508

31188

41668

21514

21509

31010C

41992

CALIFORNIA - SIERRA CO.

NEVADA - WASHOE CO.

41419

Dog Valley Road

21511

41419G

21513

31036

31124

41132

41419

41669

31046

Bull Ranch Road

31010

31002B

#102 Line

Hennes Pass Road

31002A

31027

31124

Peavine Alternative

Somersett Parkway

Truckee River

#114 Line

#106 Line

#101 Line

California Substation

Verdi

80

Basemap: Copyright © 2014 Esri

Peavine Alternative
NFS Roads
NFS Motorcycles Only
Public and Private Road
Not Open to Public Motorized Travel
Roads Used for Aceess But Not Widened
120 kV Transmission Line
345 kV Transmission Line

Land Ownership

U.S. Forest Service
Private Land

PROPOSED ROAD IMPROVEMENTS (TEMPORARY WIDENING)

Designated Roads on NFS Land
Non-Designated Roads on NFS Land
Private And Public Roads Across Private Land

N

FIGURE 2.5-1
PEAVINE ALTERNATIVE: TEMPORARY ROAD IMPROVEMENTS

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

1 " = 4,000 feet
0 2,000 4,000 8,000
Feet

Path: X:\WV\Clients\NV_Energy\Bordertown_to_California_EIS\MXDs\EIS\Chapter_2\Figure 2.5_1 _Peavine_Alt_Temp_Road_Improvements.mxd

Bordertown Substation
395
Alturas Line
North Virginia Street
41666
21501
41128
41643
41735
41643
41643
41992
21506
21501
21506
41642
41666
31010
31010A
31010B
31010C
31192
41668
21514
21301
21509
21506
Peavine Peak
21511
41192
41419
21512
41192
Peavine Peak Road
41641
21513
31124
41132
41669
41419
CALIFORNIA - SIERRA CO.
NEVADA - WASHOE CO
Bull Ranch Road
Poeville Alternative
31002A
#102 Line
31124
Somersett Parkway
Truckee River
#114 Line
31005
#101 Line
#106 Line
California Substation
Verdi
80
Basemap: Copyright© 2014 Esri

Path: X:\NV\Clients\NV_Energy\Bordertown_to_California_EIS\MXD's\EIS\Chapter_2\Figure 2.6_1_Poeville_Alt_Temp_Road_Improvements.mxd

Poeville Alternative
NFS Roads
NFS Motorcycles Only
Public and Private Road
Not Open to Public Motorized Travel
Roads Used for Public Access But Not Widened
120 kV Transmission Line
345 kV Transmission Line

Land Ownership
U.S. Forest Service
Private Land

PROPOSED ROAD IMPROVEMENTS (TEMPORARY WIDENING)
Designated Roads on NFS Land
Non-Designated Roads on NFS Land
Private And Public Roads Across Private Land

N

FIGURE 2.6-1
POEVILLE ALTERNATIVE: TEMPORARY ROAD IMPROVEMENTS

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

1 " = 4,000 feet
0 2,000 4,000 8,000
Feet

2.7 PEAVINE/POEVILLE ALTERNATIVE

The Peavine/Poeville Alternative would be approximately 11.9 miles long (Figures **2.1-1**, **2.1-2**, and **2.1-3**). The first approximately 6.4 miles of the Peavine/Poeville Alternative would be the same as the first 6.4 miles of the Peavine Alternative. The last approximately 3.8 miles would be the same as the last 3.8 miles of the Poeville Alternative. A total of approximately 4.1 miles of the Peavine/Poeville Alternative would be located next to an existing power line corridor. **Table 2.7-1** summarizes land status and length of ROW in California and Nevada.

Table 2.7-1 ROW/Easement Requirements for the Peavine/Poeville Alternative

LAND OWNERSHIP/ ADMINISTRATION	MILES IN CALIFORNIA	MILES IN NEVADA	TOTAL MILES	PERCENT OF TOTAL	ACRES OF ROW/EASEMENT[1]
USFS	0	4.3	4.3	36.4	46.9
BLM	0.4	0.0	0.4	3.3	8.1
Private Land	0.7	6.4	7.1	60.2	78.5
Total	1.1	10.7	11.8	100	133.5

[1] Includes proposed expansion area associated with the Bordertown Substation

Approximately 26.1 miles of existing roads would need to be widened for construction access, as displayed on **Figure 2.7-1**. The acres of surface disturbance associated with widening are presented in **Table 2.7-2**.

Table 2.7-2 Road Widening Required for the Peavine/Poeville Alternative

ROAD/ROUTE TYPE	WIDENING REQUIRED (MILES)	SURFACE DISTURBANCE (ACRES)[1]
Designated NFS Roads on NFS Land	8.9	22.6
Non-Designated Routes on NFS Land	0.0	0.0
Existing Roads Across Private Land	17.2	43.7
Total (Roads/Routes on All Land)	26.1	66.3

[1] Does not include existing road disturbance, which is assumed to be 9 feet wide.

Approximately 7.8 miles (28.4 acres) of new temporary centerline travel roads would be needed for construction of the Peavine/Poeville Alternative.

The design features specific to the Peavine/Poeville Alternative that would be implemented during construction and/or maintenance of the project are described in **Appendix B: Section 1.2.4**.

2.8 MODIFICATIONS MADE TO ALTERNATIVES DURING SCOPING

2.8.1 Mitchell Route Modification

The first alignment of the Mitchell Alternative was presented during the public scoping period. The northern portion of the original Mitchell Alternative was the same as the Stateline Alternative, and encountered the same Webber ivesia (*Ivesia webberi*) populations that made the Stateline Alternative environmentally unreasonable and technically infeasible. However, the remaining southern portion of the original Mitchell Alternative that was not shared with the Stateline Alternative was still feasible and practical. After dismissal of the Stateline Alternative, the alignment of the Mitchell Alternative was modified by connecting it to the Peavine Alternative, making the first 5.0 miles of the alignment the same as the Peavine Alternative. To ensure that the revised Mitchell Alternative had no conflicts with Webber ivesia, a field survey was conducted, and no occurrences of sensitive plants or potential habitat were discovered.

2.8.2 Poeville Alternative North Virginia/Trail Drive Route Modification

The first alignment of the Poeville Alternative was presented during the public scoping period that placed approximately 2.4 miles of the Poeville Alternative on the south side of North Virginia Street. At Mar Mac Way, the alternative would head south to the former community of Poeville, and then continue over the east shoulder of Peavine Peak. Upon further evaluation, NV Energy revised the portion of the alignment between Copperfield Drive and Mar Mac Way to follow Trail Drive rather than North Virginia Street. Placing the transmission line along Trail Drive would reduce the disruption to traffic on North Virginia Street during construction, and would be easier to construct. Distribution lines occur along both roadways (e.g., Trail Drive and North Virginia Street) that would need to be transferred to a single pole under-build. However, transfer activities on an alignment on Trail Drive would be easier because the distribution line is intermittent and single phase (rather than three phase). Easement acquisition on Trail Drive would also be easier due to fewer property owners and more parcels that are vacant. Adjusting the Poeville route using Trail Drive was reasonable and this modification was incorporated into the Poeville Alternative.

2.8.3 Peavine Ranch Off Property Route Adjustment

The Poeville Alternative, as it was presented during public scoping, crossed diagonally over one of the Peavine Ranch parcels. To avoid impacts to private property and the historic setting of Peavine Ranch, the Poeville Alternative was moved to the perimeter of the Peavine Ranch property.

2.9 PREFERRED ALTERNATIVE

The Poeville Alternative has been identified as the Agency Preferred Alternative. This alternative is consistent with the Humboldt-Toiyabe Forest Plan (as amended), "to manage all utility, road and transmission corridors and when utility right of way applications are received, the first priority will be to utilize existing corridors." The Poeville Alternative would utilize existing utility corridors more than any of the other action alternatives. This alternative would maximize the use of federally designated portions of Section 368 Energy Corridor (P.L. 109-58) and regionally designated utility corridors.

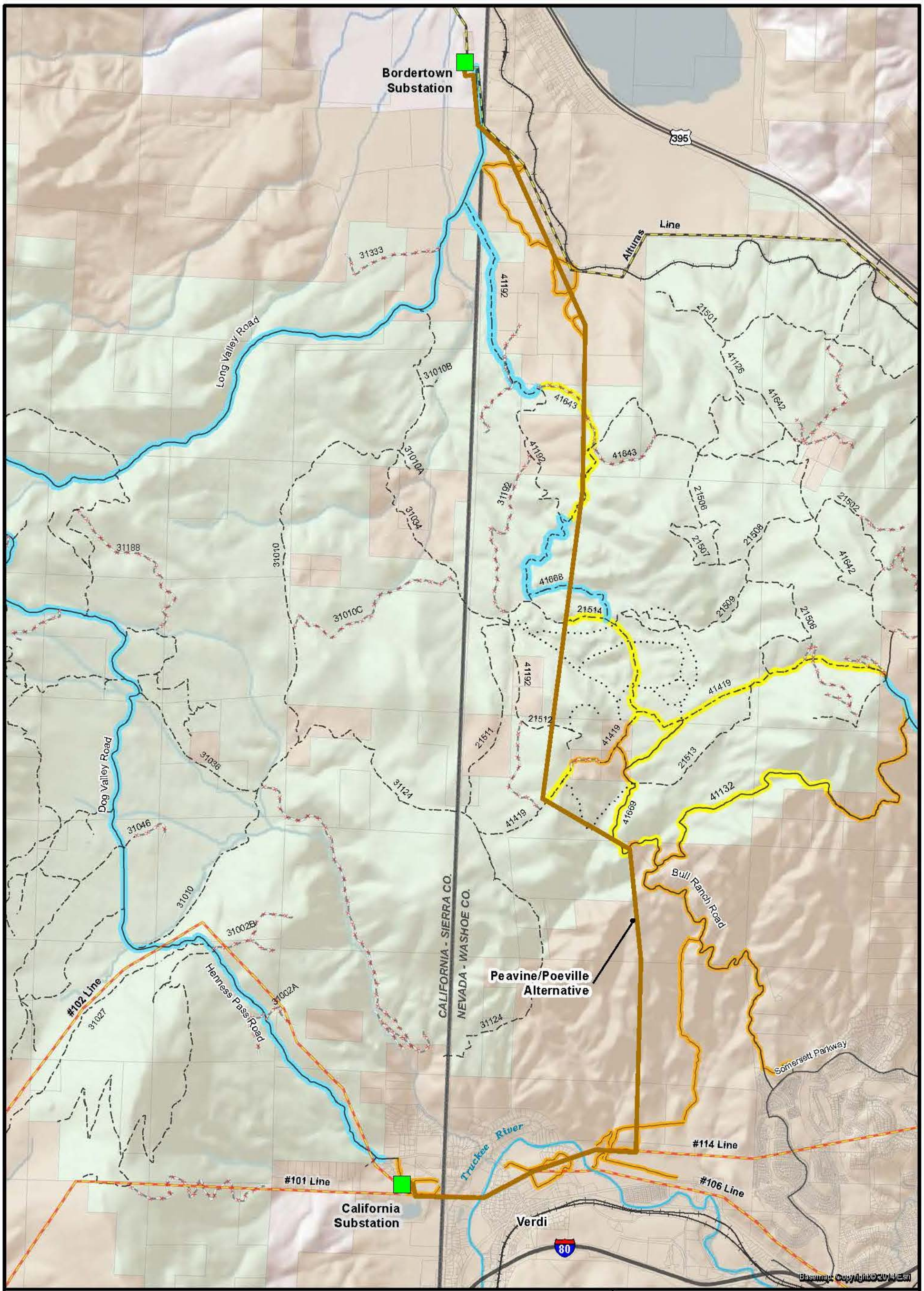


FIGURE 2.7-1
PEAVINE/POEVILLE ALTERNATIVE: TEMPORARY ROAD IMPROVEMENTS

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

2.10 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The NEPA requires federal agencies to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not further developed in detail (40 CFR 1502.14). Potential alternatives were evaluated to determine which were reasonable to consider further, using the CEQ, USFS NEPA Handbook, and USFS Special Uses Handbook (FSH 2709.11). The screening criteria from CEQ and agency requirements are found in the project record. Alternatives that were dismissed from further consideration are summarized below.

2.10.1 Stateline Alternative

The Stateline was presented as the Proposed Action in the NOI and to the public and cooperating agencies during the scoping period. The Stateline Alternative was based on the Stateline Route presented in the Constraint Study, which identified the Stateline Route as the most desirable route because it encountered the fewest constraints. The Stateline Alternative generally paralleled the California state line, staying on the Nevada side, approximately 0.1 mile east of the California State line. The Stateline Alternative crossed occupied habitat for Webber ivesia, a USFS sensitive species that had been recently proposed for listing as threatened under the Endangered Species Act of 1973 (ESA). In order to protect the Webber ivesia, the USFS formulated the following design feature:

> Project activities would be excluded from the occupied habitat unit for Webber ivesia, which includes the 500-meter buffer. (*Occupied habitat* includes the low sage habitat where the plants are present and a 500-meter buffer from the edge of the occurrence. The 500-meter buffer would include low sage and adjacent shrub steppe habitats to accommodate pollinators associated with the rare plant community).

Without the inclusion of the design feature, the Stateline Alternative would not be environmentally reasonable due to potential impacts to the occupied habitat for Webber ivesia. However, with the inclusion of the design feature, the alternative would not be technically feasible because the protection buffer exceeds the maximum span length possible between two pole structures. The Stateline Alternative was dismissed from further consideration and analysis because it would be either environmentally unreasonable or technically infeasible to implement.

2.10.2 Stateline/Poeville Alternative

The Stateline/Poeville Alternative was developed to address visual impacts to the viewshed of private property near the California Substation. The Stateline/Poeville Alternative was created by making a hybrid between the Stateline and Poeville Alternatives. The last 3.8 miles of the Stateline/Poeville Alternative would be the same as the Poeville Alternative and would replace the existing, but currently inactive 60 kV #632 distribution line in its exact location, and parallel the existing #114 and #106 lines through Verdi to the California Substation. This alternative was determined to be unreasonable for the reasons discussed for the Stateline Alternative (see **Section 2.10.1**).

2.10.3 Dog Valley Alternative

The Dog Valley Alternative was originally presented in the Constraint Study (JBR 2009a). Most of this alternative would be located in California, about three miles west of the California state line. Although this alternative maximized routing next to an existing transmission line, it was the longest alternative; crossed the most pine forest community; and crossed Dog Valley. The Dog Valley Alternative was dismissed from further consideration because it would have greater environmental impacts than the Mitchell and Peavine Alternatives.

2.10.4 Long Valley Alternative

The Long Valley Alternative was originally presented in the Constraint Study (JBR 2009a). The alternative was generally located within California, 1 mile west of the California state line. The advantage of the Long Valley Alternative was that crossed areas disturbed by wildfire and maximized routing next to an existing transmission line. However, the Long Valley Alternative encountered more sensitive resources than the Mitchell and Peavine Alternatives.

2.10.5 All Private Land Alternative

The All Private Land Alternative would avoid NFS land by wrapping around Peavine Mountain and the eastern boundary of the Humboldt-Toiyabe National Forest. From the Bordertown Substation, the alternative would follow the Alturas 345 kV transmission line corridor to the North Valley Road Substation. From the North Valley Road Substation, several routing options to reach the California Substation would be possible, but a linear corridor of undeveloped land is unavailable. Two options would follow the #141 transmission line corridor and either crosses undeveloped hillsides above the Somersett community or follows the #114 transmission line corridor through the Northwest Reno and Somersett communities. A third option would follow the #142 transmission line corridor to reach Interstate 80, and then follow Interstate 80 to Verdi.

The All Private Land Alternative was dismissed from further consideration because it would not meet the project purpose and need. None of the alignment options would be geographically independent of the #141 and #142 transmission lines to provide reliability or redundancy for the transmission system serving the West Reno/Verdi area. This alternative would unavoidably use the same corridor (with minimal separation) as the transmission lines that NV Energy needs to back up (i.e., #141 and #142 transmission lines).

2.10.6 Mostly Private Land Alternative

The Mostly Private Land Alternative would follow the Alturas 345 kV transmission line from the Bordertown Substation and then follow the #141 transmission line, which parallels North Virginia Street. Before reaching the Raleigh Heights community, the alternative would head south across NFS land, then head southwest and west to the eastern edge of the Somersett community. It would follow the #114 transmission line corridor through the Somersett community and Verdi to reach the California Substation.

The Mostly Private Land Alternative was dismissed from further consideration because it would not be technically practical or economically practical. Homes and businesses cannot be avoided in the Silver Lake and Raleigh Heights/Panther Valley areas along U.S. Highway 395 and North

Virginia Street. The extraordinary costs associated with purchasing homes and businesses would prevent this alternative from being economically practical.

2.10.7 Use Alturas 345 kV Transmission Line Poles

Use of the Alturas transmission line corridor is desirable because it is a designated West-wide Energy Corridor and represents a preferred location for placing an energy facility on public land. Sections of the Mitchell, Peavine, Poeville, and Peavine/Poeville Alternatives parallel the Alturas transmission line as the alternatives leave the Bordertown Substation. Under this alternative, rather than construct within a separate ROW next to the Alturas transmission line, the project would be placed on the same poles with the Alturas transmission line. This alternative was dismissed from further consideration because it would not be technically practical to construct. Construction would be limited to two 2-week periods per year, the maximum period that NV Energy system controls would allow the Alturas 345 kV transmission line to be de-energized. As such, construction of the transmission line could not be completed in a reasonable and timely manner.

2.10.8 Use Alturas Transmission Line Poles to North Valley Road Substation

The All Private Land and Mostly Private Land Alternatives (**Sections 2.10.5** and **2.10.6**) are constrained by U.S. Highway 395 and adjacent homes and businesses. At many locations, adequate space for a new ROW is unavailable. To address this problem, this alternative would construct the project on the same poles with the Alturas 345 kV transmission line from the Bordertown Substation to the North Valley Road Substation.

This alternative was dismissed because the alternative does not address the NERC planning criteria for transmission system reliability for the West Reno/Verdi area. To meet the project purpose and need, an alternative would need to be geographically independent of the #141 and #142 transmission lines. The All Private Land and Mostly Private Land Alternatives would still use the #141 and #142 transmission line corridors even with the implementation of the alternative.

2.10.9 #102 Line Corridor (North side) to California Substation

With the construction of the Mitchell or Peavine Alternative, a residential subdivision located next to the California Substation would be almost entirely surrounded by 120 kV transmission lines. This alternative would modify the Mitchell and Peavine Alternatives to utilize the #102 transmission line corridor to approach the California Substation, and thereby avoid placement of the proposed transmission line along the eastern and northern subdivision boundary.

This alternative was dismissed from further consideration because it would have greater socio-economic impacts than the Mitchell and Peavine Alternatives. Under this alternative, the proposed transmission line would be on the north side of the existing #102 transmission line and would cross the backyards of two existing residences and cross an undeveloped lot in the subdivision. Impacts to private property would be associated with encumbrance of the property, and with tree clearing for construction, operations, and maintenance within close proximity to the two existing homes.

2.10.10 #102 Line Corridor (South side) to California Substation

This alternative is a variation of the alternative described above (**Section 2.10.9**). By placing the proposed transmission line on the south side of the #102 transmission line corridor, this alternative would avoid crossing the residential lots and avoid placement of the proposed transmission line along the eastern and northern subdivision boundary. However, the proposed transmission line would need to cross the existing #102 transmission line twice. This alternative was dismissed from further consideration because it would not be technically practical. Crossing of a transmission by a second transmission line introduces a potential system hazard and is not an acceptable utility line construction practice unless deemed absolutely necessary.

2.10.11 #102 Line Corridor to California Substation by Rearranging Terminals

Constructing a new terminal on the west side of the California Substation would allow the use of the #102 transmission line corridor and would not require a crossing of an existing transmission line. However, the construction of a new terminal or the rearrangement of existing terminals would require the expansion of the substation and purchase of land or the acquisition of an easement on private land. It would not be technically or economically practical to expand the substation in order to facilitate the rearrangement of terminals when there is currently an available terminal space on the east side of the substation.

2.10.12 Bulk Power from #101 and #102 120 kV Lines

A comment during public scoping suggested that the need to construct a new power line could be eliminated if bulk power can be brought to the California Substation from California via the #101 and #102 transmission lines. This alternative was dismissed from further consideration because the #101 and #102 transmission lines are not available to deliver bulk energy into the NV Energy western service territory. This is because both transmission lines continue west from the California Substation to the Pacific Gas and Electric Company Summit Substation and NV Energy Summit Monitoring Station at Donner Summit, and neither facility has a 345 kV bulk power source.

2.10.13 Peavine Ranch Northside of U.S. 395

A concern was raised regarding the potential for the Poeville Alternative to affect the historic setting of Peavine Ranch, a property on the National Register of Historic Places (NRHP). Additionally, a concern about the safety of electromagnetic fields produced by the proposed transmission line considering its proximity to the Peavine Ranch residence was also raised. To avoid the Peavine Ranch, which is located on the south side of U.S. Highway 395, this alternative would construct the Poeville Alternative on the north of U.S. Highway 395.

To address the concerns about effects to the historic setting of the Peavine Ranch, the USFS consulted with the State Historic Preservation Office (SHPO) to develop mitigation measures. These measures were incorporated into the Poeville Alternative as design features **Section 2.6.1**). To address the concern about the safety of electromagnetic fields, the USFS had an independent third party expert evaluate the safety of the electromagnetic fields that would be generated by the project. The independent study confirmed that the project would not increase electromagnetic field-induced health risks at the Peavine Ranch.

Concerns would be addressed through implementation of design features for the Poeville Alternative. Consequently, this alternative was dismissed because it would not be economically practical to construct the proposed transmission line across U.S. Highway 395 if there are no mitigation benefits to gain from doing so.

2.10.14 Parcel Block Route Adjustment

The Parcel Block Route Adjustment Alternative was developed in response to public comment to the Poeville Alternative because the alternative would split a contiguous block of parcels that were owned by a single property owner. This alternative would move the Poeville Alternative to the outer perimeter of the contiguous block of parcels.

This alternative would not be substantially different from the Poeville Alternative and would not reduce or mitigate potential environmental impacts associated with the Poeville Alternative. This alternative would not be substantially different from an existing alternative already selected for consideration, and therefore, was dismissed from further consideration.

2.10.15 Undergrounding

This alternative would place the proposed transmission line underground to avoid visual impacts. This alternative was dismissed from further evaluation because it is not technically practical to bury transmission lines for long distances in very steep terrain, which occurs to some degree in every alternative. Undergrounding a transmission line over long distances would be prohibitive and is considered economically and environmentally infeasible.

2.10.16 Renewable Energy Generation Alternatives

A number of methods to generate renewable energy to serve utility customers in the West Reno/Verdi area were suggested, including a solar power plant in West Reno, a wind turbine on Peavine Peak, a hydroelectric generation facility on the Truckee River, and a large-scale battery or flywheel power storage facility. All power generation alternatives were dismissed from further evaluation because they would not meet the project purpose and need. Power generation would not provide the redundancy needed to improve the reliability of the 120 kV network that supplies power to the West Reno/Verdi area.

2.10.17 Energy Conservation

Lowering energy consumption could potentially increase available energy within NV Energy's system. This alternative was dismissed from further consideration because it would not meet the project purpose and need. Energy conservation does not provide reliability when providing power to a specific load center nor does it provide redundancy in the 120 kV transmission system needed to meet NERC reliability criteria.

2.10.18 New Substation in Reno

A new substation in Reno was suggested as an alternative to constructing a new transmission line. Construction of a new substation would not meet the project purpose and need, and therefore, this alternative was dismissed from further consideration. A new substation in Reno or the West Reno/Verdi area would not improve reliability or provide redundancy to the 120 kV system that supplies power to the West Reno/Verdi area. A substation is used to convert power

to a different voltage and is needed to regulate or reduce electric voltage to levels that can be conveyed to the customer.

2.10.19 21st Century Solution Alternative

An alternative to transmit power without the use of power lines was submitted during public scoping. This alternative was dismissed from further consideration because it would not meet the project purpose and need. There are no known methods of transmitting power except by using transmission lines and the alternative does not offer a tangible means for meeting NERC reliability criteria in providing power to the West Reno/Verdi area.

2.11 COMPARISON OF ALTERNATIVES

To facilitate a clear understanding of the alternatives being considered in detail, this section provides a summary of the effects of implementing each alternative presented in Chapter 2.

2.11.1 Summary of Alternatives Carried Forward for Analysis

Components from each alternative are provided in **Table 2.11-1** to allow for ease of comparison.

Table 2.11-1 Summary of Action Alternatives Carried Forward for Detailed Analysis

PROJECT COMPONENT	MITCHELL ALTERNATIVE	PEAVINE ALTERNATIVE	POEVILLE ALTERNATIVE	PEAVINE/ POEVILLE ALTERNATIVE
Miles of new transmission line...	11.7	10.3	18.0	11.9
...in Nevada	5.3	7.2	16.9	10.8
...in California	6.4	3.1	1.1	1.1
Miles sharing an existing utility corridor	4.6	2.8	12.6	4.1
...on NFS land	3.8	2.0	4.0	0.0
...on BLM-administered public land	0.4	0.4	0.4	0.4
Miles of new transmission line...				
...on NFS land	8.4	7.0	3.8	7.5
...on private land and BLM-administered public land	3.3	3.3	14.2	4.3
Bordertown Substation expansion BLM-administered public land (acres)	3.7	3.7	3.7	3.7
Number of new transmission line poles...	124	109	190	126
...on BLM-administered public land	5	5	5	5
...on NFS land	89	74	43	45
Miles of temporary centerline travel road...	7.1	7.5	5.4	7.8
...on NFS land	6.1	6.5	0	4.3
...on private land	1.0	1.0	5.4	3.5
Temporary road widening disturbance (acres)...	28.3	53.3	62.1	66.3
...on NFS land (designated roads)	14.4	25.5	4.5	22.6
...on NFS land (non-designated roads)	2.7	3.5	2.4	0
...on BLM-administered public land	0	0	0	0
...on private land	11.2	24.3	55.1	43.7
Short-term disturbance during construction (acres)...	281.7	302.1	627.6	376.0
...on NFS land	176.5	184.2	167.6	132.9
...on BLM-administered public land	29.1	29.1	29.1	29.1
...on private land	76.1	88.8	430.9	215.9

Note: See **Table 2.11-2** for acres of tree removal under transmission line wires

2.11.2 Comparison of Alternatives – Resource Impacts

The comparison of alternatives draws together the conclusions from the information and discussion presented throughout the EIS and briefly summarizes the results of the analysis. **Table 2.11-2** compares alternatives by key issues and environmental effects. See **Chapter 3** for the detailed analysis by resource area.

Table 2.11-2 Comparison of Alternatives by Key and Non-key Issues

ISSUE	NO ACTION ALTERNATIVE	MITCHELL ALTERNATIVE	PEAVINE ALTERNATIVE	POEVILLE ALTERNATIVE	PEAVINE/ POEVILLE ALTERNATIVE
Key Issue – Visual Resources					
Conformity with USFS VQOs from key observation points (KOPs)	No impact	Conforms with USFS VQOs	Same as Mitchell Alternative	Same as Mitchell Alternative	Same as Mitchell Alternative
Key Issue – Land Use and Private Property					
Number of private property parcels crossed by the proposed transmission line ROW/easement	No impact	13 parcels	13 parcels	130 parcels	62 parcels
Private property value	No impact	Long-term negligible impacts on properties with existing homes, and long-term minor to negligible impacts on vacant properties	Same as Mitchell Alternative	Same as Mitchell Alternative	Same as Mitchell Alternative
Consistency with local land use plans	Consistent; no impact	Requires an amendment to the Truckee Meadows Regional Plan and a SUP in Sierra County, Washoe County, and the City of Reno	Same as Mitchell Alternative	Same as Mitchell Alternative	Same as Mitchell Alternative
Key Issue – Public Health and Safety					

ISSUE	NO ACTION ALTERNATIVE	MITCHELL ALTERNATIVE	PEAVINE ALTERNATIVE	POEVILLE ALTERNATIVE	PEAVINE/ POEVILLE ALTERNATIVE
Electric field during project operation	No impact	Up to 2.559 kV per meter within the ROW/easement (above non-regulatory threshold), and up to 1.043 kV per meter at the ROW/easement boundary (below non-regulatory threshold)	Same as Mitchell Alternative	Up to 2.943 kV per meter within the ROW/easement (above non-regulatory threshold), and up to 0.989 kV per meter at the ROW/easement boundary (below non-regulatory threshold)	Same as Poeville Alternative
Magnetic field during project operation	No impact	Up to 153.2 milligauss within the ROW/easement (below non-regulatory threshold), and up to 42.0 milligauss at the ROW/easement boundary (below non-regulatory threshold)	Same as Mitchell Alternative	Up to 151.1 milligauss within the ROW/easement (below non-regulatory threshold), and up to 42.9 milligauss at the ROW/easement boundary (below non-regulatory threshold)	Same as Poeville Alternative
Risk to public health and safety	No impact	No impact	No impact	No impact	No impact
Air Quality Resources					

ISSUE	NO ACTION ALTERNATIVE	MITCHELL ALTERNATIVE	PEAVINE ALTERNATIVE	POEVILLE ALTERNATIVE	PEAVINE/ POEVILLE ALTERNATIVE
Emissions of criteria pollutants (carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide) from construction, operation, and maintenance of the proposed project	No change from current condition	Temporary and minor impacts from particulate matter emissions; Temporary and negligible impacts from emission of all other criteria pollutants	Same as Mitchell Alternative	Same as Mitchell Alternative	Same as Mitchell Alternative
Biological Resources					
Acres of vegetation communities disturbed but are proposed to be restored	No impact	281.7 acres	302.1 acres	627.6 acres	377.9 acres
Acres of vegetation permanently removed with no proposed restoration (Pole structures and Bordertown Substation expansion)	No impact	3.8 acres	3.8 acres	3.9 acres	3.8 acres
Acres of tree cutting needed to maintain safe transmission line clearance	No impact	42 acres	21.4 acres	3 acres	12 acres
Acres of known noxious weed infestations within variable-width corridor and road widening corridor as a measure of the potential to spread and/or introduce noxious weeds	No impact	6.4 acres plus an additional 30 infestations of unknown size	12.7 acres plus an additional 23 infestations of unknown size	34.3 acres plus an additional 115 infestations of unknown size	30.3 acres plus an additional 109 infestations of unknown size
Miles of temporary new centerline travel roads required for project access as a measure of the potential to spread noxious weeds	No impact	7.1 miles	7.5 miles	5.4 miles	7.8 miles
Disturbance to Forest Service Sensitive and other special status plants	No impact	No impact on special status plant populations or individuals; Impacts to potential habitat would be avoided or minimized	5.3 acres of occupied habitat for Dog Valley ivesia.	Same as Mitchell Alternative	5.3 acres of occupied habitat for Dog Valley ivesia

ISSUE	NO ACTION ALTERNATIVE	MITCHELL ALTERNATIVE	PEAVINE ALTERNATIVE	POEVILLE ALTERNATIVE	PEAVINE/ POEVILLE ALTERNATIVE
Occupied habitat for Webber ivesia	No impact	No impact	No impact	No impact	No impact
Result in a loss of population viability or trend toward federal listing for Forest Service Sensitive wildlife	No impact	Short term impacts to individuals; no impact to viability	Short term impacts to individuals; no impact to viability	Short term impacts to individuals; no impact to viability	Short term impacts to individuals; no impact to viability
Result in downward trend in populations and or habitat capability for Management Indicator Species or other general wildlife species	No impact	No long term impact populations or habitat capability	Same as Mitchell Alternative	Same as Mitchell Alternative	Same as Mitchell Alternative
Disturbance to federally threatened species: Lahontan cutthroat trout	No impact	No impact	No impact	No impact	No impact
Interference with wildlife movement/migration or important seasonal habitat, particularly for mule deer	No impact	Short-term and long-term minor to negligible impacts	Same as Mitchell Alternative	Same as Mitchell Alternative	Same as Mitchell Alternative
Cultural Resources					
Number of identified eligible and potentially eligible historic properties or sites	No impact	4 sites	4 sites	9 sites	9 sites
Potential for unanticipated discovery of resources during road widening	No impact	High potential	Moderate potential	Low potential	Low potential
Watershed Resources (Soil and Water)					
Acres of surface disturbance to soils rated as severe erosion hazard	No impact	285.5 acres	305.9 acres	631.4 acres	381.8 acres
Number of constructed fords and unimproved crossings of streams	No impact	7 stream crossings on NFS land and 2 stream crossings on private land	12 stream crossings on NFS land and 4 stream crossings on private land	No stream crossings on NFS land and 15 stream crossings on private land	11 stream crossings on NFS land and 5 stream crossings on private land

ISSUE	NO ACTION ALTERNATIVE	MITCHELL ALTERNATIVE	PEAVINE ALTERNATIVE	POEVILLE ALTERNATIVE	PEAVINE/ POEVILLE ALTERNATIVE
Number of constructed fords and unimproved crossings of wetlands and riparian zones	No impact	No crossings on NFS land and 2 wetlands and/or riparian zone crossings on private land	No crossings on NFS land and 7 wetlands and/or riparian zone crossings on private land	2 riparian zone crossings on NFS land and 7 crossings on private land	No crossings on NFS land and 8 wetlands and/or riparian zone crossings on private land

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION TO ENVIRONMENTAL ANALYSIS

This chapter describes the existing condition of the natural and human environment in terms of the environmental resources that would potentially be affected by the project alternatives discussed in **Chapter 2**. **Chapter 3** also analyzes and discloses the potential effects on these environmental resources that would result from implementation of any of the alternatives, including the No Action Alternative. This chapter also presents the scientific and analytical basis for comparison of these alternatives.

3.1.1 Resource Analysis

Resource specialists assessed the potential effects of the alternatives for each resource area and the effects have been documented in project-specific specialist reports. Specialist reports are a part of the planning record on file at the Humboldt-Toiyabe National Forest Supervisor's Office in Sparks, Nevada. The following reports, assessments and other documents are incorporated by reference:

- *Specialist Report: Cultural Resources Bordertown to California 120 kV Transmission Line Project* (USFS 2014a);
- *Specialist Report: Recreation Bordertown to California 120 kV Transmission Line Project* (USFS 2014b);
- *Specialist Report: Roads and Transportation Bordertown to California 120 kV Transmission Line Project* (USFS 2014c)
- *Specialist Report: Special Status Plants Bordertown to California 120 kV Transmission Line Project* (USFS 2014d);
- *Specialist Report: Special Status Wildlife Bordertown to California 120 kV Transmission Line Project* (USFS 2014e);
- *Specialist Report: Vegetation Resources Bordertown to California 120 kV Transmission Line Project* (USFS 2014f);
- *Specialist Report: Visual Resources Bordertown to California 120 kV Transmission Line Project* (USFS 2014g);
- *Specialist Report: Water and Soils Bordertown to California 120 kV Transmission Line Project* (USFS 2014h);
- *Wildfire and Fuels Management Bordertown to California 120 kV Transmission Line Project* (USFS 2014i);
- *Noxious Weed Risk Assessment Bordertown to California 120 kV Transmission Line Project* (JBR 2013b); and
- *Electric and Magnetic Field Evaluation for Proposed Bordertown to California 120 kV Transmission Line* (Enertech and Sheppard 2013).

3.1.1.1 Cumulative Effects

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable

future actions regardless of what agency (federal or non-federal) or person undertakes such actions" (40 CFR 1508.7).

The **temporal extent** of the actions to be considered is the maximum term of the SUP that would be issued for the proposed ROW/easement, which is 50 years. The **spatial extent** of the projects considered in the cumulative effects analysis varies by the resource. **Table 3.1-1** defines the Cumulative Impact Analysis Area (CIAA) considered for each resource.

Table 3.1-1 Cumulative Impact Analysis Area by Resource

RESOURCE	DEFINITION OF CIAA	RATIONALE FOR CIAA
Visual Resources	All areas within 2 miles of the centerline of each action alternative and the California and Bordertown substations	Area contains all of the visual evidence of present and reasonably foreseeable future actions that would typically be viewed in conjunction with the proposed project
Land Use	All areas within 2 miles of the centerline of each action alternative and the California and Bordertown substations	The action alternatives would be unlikely to have any measureable incremental effects on the resource beyond 2 miles
Water Resources and Soils		
Vegetation		
Special Status Plants		
Wildlife	All areas within 2 miles of the centerline of each action alternative and the California and Bordertown substations	Area incorporates NFS land and areas that may have an influence on wildlife and habitat, and is the extent to which impacts of the proposed project would be limited
Special Status Wildlife		
Wildfire	All areas within 2 miles of the centerline of each action alternative and the California and Bordertown substations	Area captures the fire history and access adjacent to the proposed transmission line regardless of the potential construction of any action alternative
Air Quality	Sierra County, California, and Washoe County, Nevada	Regulatory boundary for which ambient air quality attainment is measured and in which project-related emissions would occur
Cultural Resources	Variable-width corridor and road widening corridor	Maximum extent of construction- and maintenance-related surface disturbance, and includes a buffer from which a cultural site could be viewed concurrent with visual impacts of the proposed project

The CEQ issued an interpretative memorandum on June 24, 2005, regarding analysis of past actions, which states, "agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." In order to understand the contribution of past actions to the cumulative effects of the proposed project, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate

impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

The present actions within the resource CIAAs that have had cumulative effects to resources that would be impacted from the proposed project include the following:

- Resource management activities;
- Other transmission lines and utility lines (e.g., pipelines);
- Maintenance and use of existing transportation network;
- Urban development;
- Livestock grazing; and
- Mining, including sand and gravel extraction.

3.1.1.2 Information for Resource Issues

The following resource issues are not affected by the alternatives or localized effects are disclosed in other resource sections. A brief summary on why they are not discussed further in **Chapter 3** is provided based upon input received during scoping.

Climate Change

Not affected or negligibly affected by the action alternatives. Climate change will not have any influence on the potential impacts of any action alternative.

Environmental Justice (Executive Order 12898)

There are no minority populations or low-income populations identified within any of the U.S. Census Bureau census block areas that would be crossed by one or more of the action alternatives. Minority populations and low-income populations were evaluated in accordance with the criteria and direction provided in *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (U.S. Environmental Protection Agency 1998).

Forest Product Resources

Long-term loss of forest product resources (e.g., timber, firewood, and Christmas trees) would occur within forested areas cleared for line safety. Impacts would be negligible because forest communities and forest product resources are locally and regionally common, based on the number of acres of each community available within 5 miles of the variable-width corridor of each action alternative (USFS 2014f).

Hazardous Materials and Waste

The proposed transmission line, regardless of the action alternative implemented, would cross undeveloped land or would use existing utility corridors and roads. Hazardous materials would not be expected to occur within these areas. The proposed project would not expose workers to any preexisting hazardous materials and wastes during construction, operation, or maintenance.

Limited use of hazardous materials, such as fuel, lubricants, and paint solvents would be used for construction of the proposed project. To ensure that the use of such materials would have negligible impacts on human health or any other environmental resources, design feature HM 1 and WA 3 (**Appendix B**) would be implemented during construction. A SPCC Plan would describe safe handling, storage, and clean-up of hazardous materials.

Herbicides would be used to control noxious weeds. While herbicides are not a hazardous material, it is recognized that safe handling and usage would ensure safety for biota and humans. Design features HM 1 and HE 1 through HE 8 (**Appendix B**) would be implemented to ensure safe handling and usage and would require that a spill cleanup kit be readily available whenever herbicides are transported or stored. These design features would also ensure that all herbicides are mixed away from surface waters and groundwater wells.

Native American Resources

The USFS consulted with Native American Tribes in accordance with the National Historic Preservation Act, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, and Executive Order 13007 (American Indian sacred sites). In a letter dated November 10, 2011, the USFS invited the Pyramid Lake Paiute Tribe, Washoe Tribe of Nevada and California, and the Reno-Sparks Indian Colony to comment on the project and identify concerns. The USFS met with the Washoe Tribe of Nevada and California on February 22, 2011, and the Reno-Sparks Indian Colony on August 8, 2011 to discuss the project during face-to-face consultation meetings. No areas of traditional religious and cultural importance or specific areas of cultural and/or geographical interest within the analysis area were identified. The USFS will continue consultation with Native American Tribes through the completion of the NEPA process.

Noise

Operation of the project would not increase ambient noise levels at the California or Bordertown substations, or anywhere along the transmission line. The current equipment at each substation that creates audible sound are transformers, the regulator and phase shifters; these are magnetic devices that make noise. The proposal is to install line switches, circuit breakers and protection relays; none of which will add to the audible noise level. Impacts on noise would not occur from implementation of the No Action Alternative or any of the action alternatives.

Paleontological Resources

The majority of geologic units that would be crossed by one or more of the action alternatives consist of either igneous or metamorphic rock formations (Bell & Garside 1987; Saucedo & Wagner 1992; Soeller & Nielsen 1980). The heat and pressure under which these formations are created are not conducive to fossil preservation. Geologic units that consist of sedimentary rock are generally either Holocene or Pleistocene in age. Holocene aged units are younger than 10,000 years before present day. According to the BLM Potential Fossil Yield Classification system (BLM 2007), geologic formations younger than 10,000 years before present are generally not likely to contain vertebrate fossils or scientifically important non-vertebrate fossils. Pleistocene aged sedimentary rock units that would be crossed by one or more action alternative are minimal

and generally located in areas where existing roads provide access and little excavation or grading would be required for project construction. Additionally, there are no known surface fossils within areas that would be crossed by any of the action alternatives. Accordingly, implementation of any of the action alternatives would be anticipated to have negligible (**Table 3.1-2**) to no impact on paleontological resources.

Recreation

The proposed project would temporarily increase motorized travel on existing roads and increase the number of people present on NFS land in the project area. However, increases would be temporary for the duration of construction. Subsequent maintenance of the line would not have any meaningful increase in motorized traffic or people. Roads widened for project construction would be returned to the pre-construction conditions. Where new roads cross motorized trails, the trail would be restored to its pre-construction condition.

Visibility of the proposed pole structures and overhead conductors would increase the evidence of humans for the operational life of the proposed project. However, increased evidence of humans from the project would generally occur in settings where evidence of humans currently exists in the form of roads, motorized travel on roads, and overhead utility lines. Accordingly, the proposed project would not conflict with or modify the existing Recreation Opportunity Spectrum designations within the project area, which consist of Roaded Natural on NFS land and Backcountry on BLM-administered public land.

Socioeconomics

The proposed project would be constructed, operated, and maintained by the existing NV Energy workforce or their contractors. Thus, the proposed project is anticipated to generate employment, additional revenue for existing employees, businesses, or organizations. Implementation of any of the action alternatives would not have any adverse impacts on socioeconomics.

Transportation/Road Networks

The proposed project would not modify the existing MVUM (USFS 2011a) or other network of roads and trails open to public use. Impacts on transportation and road networks would not occur from implementation of the No Action Alternative or any of the action alternatives.

Wilderness and Roadless Areas

The nearest wilderness area to any of the action alternatives, Mt. Rose Wilderness, is approximately 4 miles southeast of the California Substation (USFS 2007). Mt. Rose Wilderness would not be affected from implementation of any of the action alternatives. There are no inventoried roadless areas on the NFS land within the project area (USFS 2001).

3.2 VISUAL RESOURCES

3.2.1 Issue Statement

Transmission line power poles and conductor wires may reduce the existing scenic quality in the proposed ROW/easement and interrupt the scenic integrity of the viewshed.

a. Issue measured by: Conformity with the USFS VQOs based on visual simulations from KOPs.

3.2.2 Affected Environment

3.2.2.1 Visual Character

The project area consists of mountainous terrain, valleys and drainages typical of the eastern front of the Sierra Nevada. Topography ranges from nearly flat in Dog Valley and Long Valley, to greater than 30 percent slopes in more mountainous areas. Elevation ranges from approximately 5,300 feet to 7,300 feet above mean sea level (AMSL). A dominant topographic feature is Peavine Peak, which offers scenic, panoramic views. Vegetation cover consists of shrubland and conifer forest, with much of the area having been affected by wildfire. As a result of the wildfires, existing vegetation cover in some portions of the project area is dominated by cheat grass and other annual grasses and forbs. Where the Truckee River crosses the project area vegetation includes riparian shrubs and trees.

The project area is bisected by numerous roads and trails ranging from narrow, unpaved roads or trails, to wide, paved highways and interstates including U.S. Highway 395 and Interstate 80. Numerous power lines cross the project area. Power lines include distribution lines and transmission lines, such as the Alturas 345 kV line and the #101 120 kV line. The Bordertown and California substations are located at the northern and southern ends of the project area, respectively. Previous disturbance from a buried gas pipeline along the unpaved section of Dog Valley Road are still visible within the project area.

3.2.2.2 Visual Quality

The Forest Plan states that the National Forest is to be managed with a sensitivity for visual quality and to achieve applicable VQOs. The VQOs on NFS land within any particular landscape are based on the scenic quality and aesthetic concern or sensitivity level for three possible distance zones of the landscape:

- foreground: area within 0.25 to 0.5 mile of observer;
- middleground: area up to 3 to 5 miles from observer; and
- background: area beyond the middleground (USFS 1974).

The VQOs are designed to provide measureable standards or targets for which the visual resource of the landscape should be managed. The VQOs describe the magnitude of alteration that is acceptable within a characteristic landscape. There are five different VQOs that can be managed on a landscape: Preservation, Retention, Partial Retention, Modification, and Maximum Modification. With the exception of Preservation, all of these VQOs occur on NFS land within the project area (**Figure 3.2-1**). The management goals and objectives that define each of the VQOs in the project area are provided in **Table 3.2-1**.

Table 3.2-1 Description of VQOs within Project Area

VQO DESIGNATION	MANAGEMENT GOALS AND OBJECTIVES
Retention	Management activities and actions should not be visually evident. Activities and actions may only repeat form, line, color, and texture which occur frequently in the characteristic landscape; changes in their qualities of size, amount, intensity, direction, and so forth, should not be evident.
Partial Retention	Management activities and actions should remain visually subordinate to the characteristic landscape. Activities and actions may repeat form, line, color, or texture common to the characteristic landscape, but changes in their qualities of size, amount, intensity, direction, and so forth, should remain visually subordinate to the characteristic landscape. Activities and actions may also introduce form, line, color, or texture which occur infrequently or not at all in the characteristic landscape, but should remain subordinate to the visual strength of the characteristic landscape.
Modification	Management activities and actions may visually dominate the characteristic landscape; however, activities and actions of vegetative and landform alterations must borrow from naturally established form, line, color, or texture such that its visual characteristics are of those naturally occurring within the surrounding area. Additional parts of these activities and actions, such as structures, roads, slash, root wads, and so forth, must remain visually subordinate to the proposed composition. Activities and actions which are predominately the introduction of facilities such as buildings, signs, and roads, should borrow naturally established form, line, color and texture such that its visual characteristics are compatible with the natural surroundings.
Maximum Modification	Management activities and actions of vegetative and landform alterations may dominate the characteristic landscape; however, when viewed in the background distance zone, the visual characteristics must be of those naturally occurring within the surrounding area. When viewed in the foreground or middleground, they may not appear to borrow completely from naturally established form, line, color, or texture. Alterations may also be out of scale or contain details unlike the natural occurrences seen in the foreground or middleground. Introduction of additional parts to these activities and actions, such as structures, roads, and slash, must remain visually subordinate to the proposed composition when viewed in the background.

Source: National Forest Landscape Management, Volume 2: Agriculture Handbook 462 (USFS 1974)

The BLM uses a visual resources management (VRM) system to manage visual resources. The primary objective of the VRM system is to maintain the existing visual quality of BLM-administered public land and to protect unique and fragile visual resources. The VRM system uses four classes, Class I through Class IV, to describe the different degrees of modification allowed to the basic elements of the landscape (i.e., line, form, color, and texture) (BLM 1986). As shown in **Figure 3.2-1**, all BLM-administered public land in the project area has been designated as VRM Class III. The objective of this class is to partially retain the existing character of the landscape. The level of change to the landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape (BLM 1986).

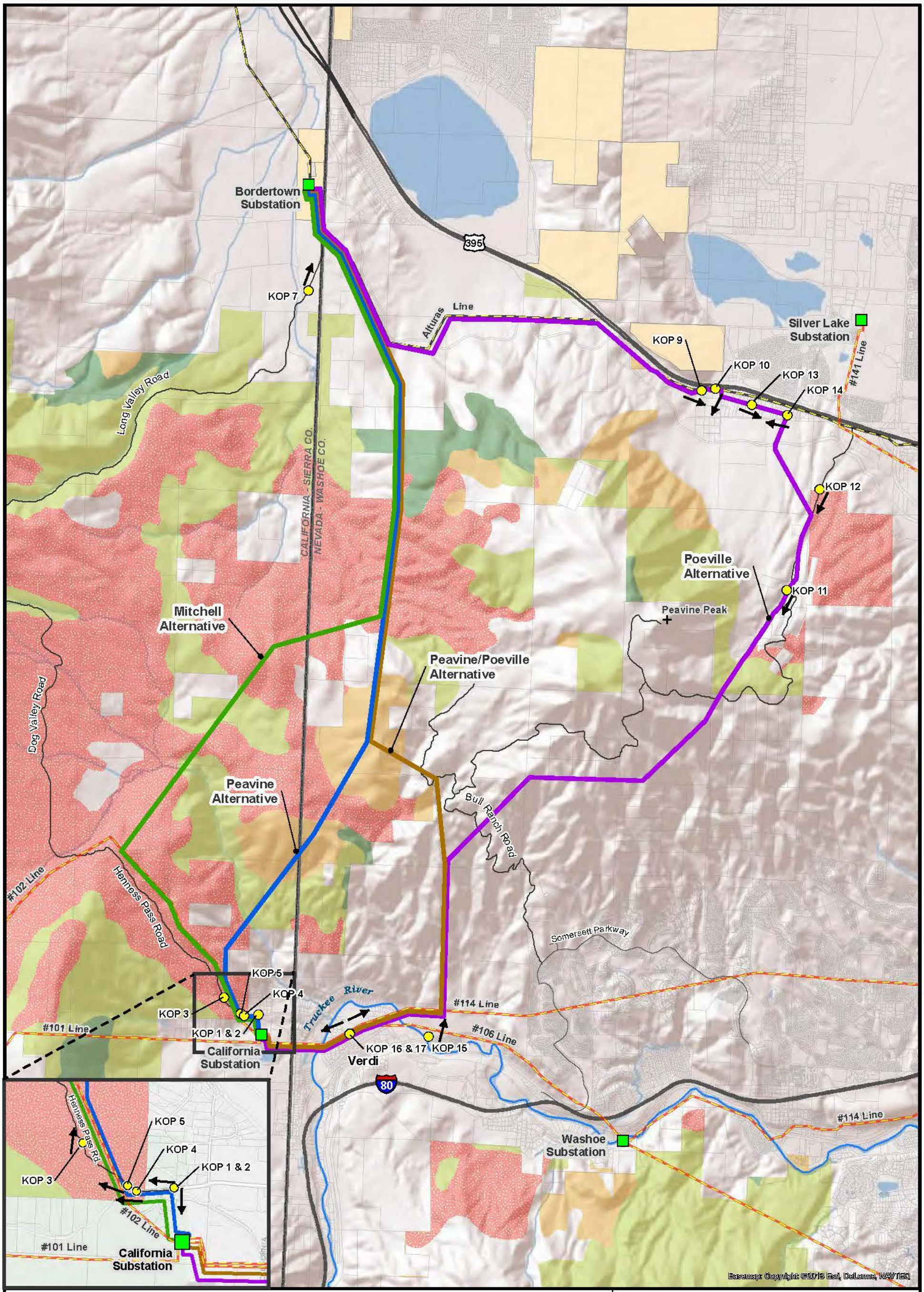


FIGURE 3.2-1
VISUAL QUALITY OBJECTIVES & KOP LOCATIONS

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

Table 3.2-2 presents the acres of VQO designations and VRM classes within the proposed ROW/easement for each action alternative.

Table 3.2-2 Federal Visual Resource Management Areas by Alternative

ALTERNATIVE	VQO DESIGNATIONS WITHIN ROW/EASEMENT (ACRES[1])					VRM CLASS (ACRES[1])
	RETENTION	PARTIAL RETENTION	MODIFICATION	MAXIMUM MODIFICATION	UNASSIGNED	CLASS III[2]
Mitchell	5.1	7.5	0.0	76.8	2.2	4.4
Peavine	5.1	5.9	24.3	35.3	5.8	4.4
Poeville	0.0	4.7	2.9	0.9	36.2	4.4
Peavine/Poeville	5.1	0.0	13.0	19.3	9.5	4.4

[1] Acres are approximate and rounded to the nearest tenth of an acre.
[2] Proposed improvements to Bordertown Substation would also be located on BLM-administered public land designated VRM Class III.

3.2.3 Environmental Consequences

The direct and indirect effects of each alternative on visual resources was assessed using a contrast analysis based on the methods of the Visual Management System (VMS) described in *National Forest Landscape Management, Volume 2: Agriculture Handbook 462* (USFS 1974). Contrast analysis is the degree to which a project or activity affects scenic quality or visual resources depending on the visual contrasts created or imposed by a project on the landscape. Contrasts are measured by comparing the form, line, color, and texture elements that characterize the appearance of the project features with the same elements for the major features in the landscape. Changes in the size, amount, intensity, direction, pattern, were used as indicators in comparing the form, line, color, and texture elements and to quantify the contrast an alternative would be expected to have with the landscape. The contrast analysis considered impacts of the project after the incorporation of project design features that have been developed to reduce or avoid impacts to visual resources (design features VI 1, RT 4, and VG 6) contained in **Appendix B**.

The contrast analysis was completed at KOPs. KOPs are sensitive receptor locations from which critical views of an alternative or alternatives would be possible. KOPs that were selected are representative of the characteristic landscapes in the project area, such as forest land, open shrubland, and residential areas. A list of the KOPs is presented in **Table 3.2-3**, and the location and direction of view from each is shown on **Figure 3.2-1**.

Table 3.2-3 Key Observation Points

KOP	KOP NAME	DIRECTION OF VIEW
KOP 1	California Substation – South	South toward the California Substation
KOP 2	California Substation – West	West and roughly aligned with Dog Valley/Henness Pass Road
KOP 3	Henness Pass/Dog Valley Road	North toward the existing #102 overhead transmission line
KOP 4	Forest Boundary – West	West and roughly aligned with Dog Valley/Henness Pass Road
KOP 5	Forest Boundary	North-northwest towards the existing #102 transmission line and Dog Valley/Henness Pass Road
KOP 7	Forest Route 41192 – North	North-northeast towards the Alturas 345 kV transmission line
KOP 9	Peavine Ranch	East and roughly aligned with North Virginia Street
KOP 10	Peavine Ranch – Southwest	Southwest towards North Virginia Street and a residence
KOP 11	Peavine Road	Southwest and roughly aligned with an overhead distribution line
KOP 12	Stead Trailhead	South-southwest and roughly aligned with Peavine Road
KOP 13	Trail Drive – East	East and roughly aligned with Trail Drive
KOP 14	Trail Drive – West	West and roughly aligned with Trail Drive
KOP 15	Truckee River Bridge	North towards the existing #106 and #114 overhead transmission lines
KOP 16	Verdi Library Parking Lot – West	West-southwest towards Bridge Street
KOP 17	Verdi Library Parking Lot – East	East towards the Verdi Library

Computer-generated visual simulations of the proposed project in its operational phase were produced as an aid in performing the contrast analysis. The visual simulations are effectively the same photograph of the existing characteristic landscape taken from each KOP with the proposed project overlaid as it would appear after construction. The computer-generated visual simulations that are provided in comparison of the existing characteristic landscape from each KOP are provided in **Appendix C**.

3.2.3.1 No Action Alternative

Under the No Action Alternative, there would be no visual impacts from the proposed project as construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur.

3.2.3.2 Mitchell Alternative

KOP 1

The degree of contrast resulting from the addition of the proposed transmission line to the characteristic landscape would be minimal, and would not attract the attention of the casual observer. The proposed overhead conductors and the proposed power pole structures would repeat line, color, and texture elements found in the existing landscape. Implementation of the Mitchell Alternative would be expected to result in a negligible loss of the visual quality and scenic attributes of the existing landscape.

The foreground, middleground, and background zones of the characteristic landscape visible from KOP 1 consist of private land that is not managed by the USFS or the BLM. The VMS and VRM system are not used for management of visual resources on private land. Thus, VQO designations and VRM classes have not been assigned to the characteristic landscape, and the Mitchell Alternative would not conflict with any existing VQOs or VRM classes.

KOP 2

Although the operation and maintenance of the proposed project would have some contrasting form, line, color, and texture elements, the contrast would be minimal and the existing character of the landscape would be retained. Implementation of the Mitchell Alternative would be expected to result in a negligible loss of the visual quality and scenic attributes of the existing landscape at KOP 2. The magnitude of contrast resulting from the Mitchell Alternative would be expected to have a long-term negligible effect on visual resources at KOP 2.

The foreground, middleground, and background of the landscape visible from KOP 2 consist of private land that is not managed by the USFS or the BLM. The VMS and VRM system are not used for management of visual resources on private land. Accordingly, VQOs and VRM classes have not been assigned to the characteristic landscape of KOP 2. The Mitchell Alternative would not conflict with any existing VQOs or VRM classes.

KOP 3

Because line, color, and texture elements of the proposed project would repeat elements typical to the landscape of KOP 3, the degree of contrast would be slight. Implementation of the Mitchell Alternative would be expected to result in a negligible loss of the visual quality and scenic attributes of the existing characteristic landscape at KOP 3. The existing character of the landscape would be retained and the effect that the Mitchell Alternative would have on visual resources would be long-term and negligible.

The foreground of the characteristic landscape visible from KOP 3 consists of NFS land that is designated as Maximum Modification VQO. The degree of contrast that would be expected to result from implementation of the Mitchell Alternative would not conflict with the management goals and objectives of the Maximum Modification VQO (**Table 3.2-1**).

KOP 4

Implementation of the Mitchell Alternative would be expected to result in a minimal loss of the visual quality and scenic attributes of the existing landscape at KOP 4. The magnitude of contrast resulting from the Mitchell Alternative would be expected to have a long-term minor effect on visual resources at KOP 4.

The foreground and middleground of the landscape visible from KOP 4 consists of NFS land that is designated as Maximum Modification VQO. The degree of contrast that would be expected to result from implementation of the Mitchell Alternative would not conflict with the management goals and objectives of the Maximum Modification VQO (**Table 3.2-1**).

KOP 5

Implementation of the Mitchell Alternative would be expected to result in a negligible loss of the visual quality and scenic attributes of the existing landscape at KOP 5. The magnitude of contrast resulting from the Mitchell Alternative would be expected to have a long-term minor effect on visual resources.

The minor effects that would be expected as a result of the implementation of the Mitchell Alternative would be consistent with management goals and objectives of the Maximum Modification VQO (**Table 3.2-1**).

KOP 7

The proposed overhead conductors and the proposed power pole structures would repeat line, color, and texture elements found in the existing landscape. Implementation of the Mitchell Alternative would result in a minimal loss of the visual quality and scenic attributes of the existing landscape at KOP 7. The existing character of the landscape would be retained and the impact on visual resources would be long-term and minor.

The foreground, middleground, and background zones of the landscape visible from KOP 7 consist of private land that is not managed by the USFS or the BLM. VQOs and VRM classes have not been assigned to the characteristic landscape of KOP 7.

Summary

The impacts on visual resources from implementation of the Mitchell Alternative would be long-term and negligible to minor. Implementation of the Mitchell Alternative would not conflict with the VQOs and VRM classes which have been designated for the characteristic landscapes of the KOPs.

Approximately 0.47 mile of the Mitchell Alternative would cross NFS land designated as Retention VQO which is not visible from any of the KOPs. The area of Retention VQO that would be crossed does not contain any existing power lines or other constructed features that contribute elements that appear similar to those that would be introduced by the proposed project. However, the existing Alturas 345 kV transmission line is located approximately 0.5 mile north of the Retention VQO area and would be within sight of the section of the proposed transmission line that would cross the area. The steel poles that would be used for the proposed transmission line would weather and rust to a dark brown, matte color that would appear essentially the same color of the pole structures used for the Alturas 345 kV transmission line. The dark brown color would also blend with natural colors found in the surrounding vegetation cover of the characteristic landscape. The thin, vertical line and form elements of the proposed poles structures would repeat the line and form elements of the existing Alturas 345 kV transmission line pole structures. Additionally, design feature VI 2, below, would be implemented to minimize visual contrast:

VI 2. The number of new poles will be minimized by increasing the pole span length on NFS land where the area is designated as Retention for VQO, as terrain allows.

The visual contrast resulting from the Mitchell Alternative would not conflict with the Retention VQO.

3.2.3.3 Peavine Alternative

The KOPs that were selected to analyze the visual impacts of the Peavine Alternative are the same as those that were selected for the Mitchell Alternative:

- KOP 1 (California Substation – South);
- KOP 2 (California Substation – West);
- KOP 3 (Henness Pass/Dog Valley Road);
- KOP 4 (Forest Boundary – West);
- KOP 5 (Forest Boundary); and
- KOP 7 (Forest Road 41192 – North).

The sections of the Peavine Alternative that would be visible from KOP 1 through KOP 5 and KOP 7 are identical to the sections of the Mitchell Alternative that would be visible from these KOPs. Thus, the proposed transmission line would appear identical from each of these KOPs regardless of the potential implementation of the Peavine Alternative or the Mitchell Alternative. Because the proposed transmission line would appear identical, the visual simulations prepared for these KOPs are applicable to both the Mitchell Alternative and the Peavine Alternative. The visual contrasts and effects that the Peavine Alternative would have on the characteristic landscape of KOP 1 through KOP 5 and KOP 7 during construction and operation and maintenance are the same as those that would result from the Mitchell Alternative. These contrasts and effects are described in **Section 3.2.3.2**.

As with the Mitchell Alternative, that approximately 0.47 mile of the Peavine Alternative would cross NFS land designated as Retention VQO which is not visible from any of the KOPs. The proposed transmission line would appear identical to Mitchell Alternative within the Retention VQO and design feature VI 2 would also be implemented. Accordingly, the visual contrast resulting from the Peavine Alternative would not conflict with the Retention VQO.

3.2.3.4 Poeville Alternative

KOP 9

Most of the elements that would be introduced from the proposed project would repeat form, line, color, and texture elements that are common to the landscape of KOP 9. The repetition of elements common to the landscape would reduce the degree of contrast from the proposed project. Although the proposed project may increase the size and amount of some elements common to the landscape, the increase would be minimal and visually subordinate. The proposed project would not be expected to dominate the view of casual observers. Loss of the visual quality and scenic attributes of the landscape at KOP 9 would be minimal. Thus, implementation of the Poeville Alternative would be expected to have a long-term minor effect on visual resources at KOP 9.

The foreground of the landscape at KOP 9 that would be crossed by the Poeville Alternative consists of private land. Middleground and background zones also consist of private land. There are no VQOs or VRM classes assigned to these areas because the VMS or VRM system is not

used for the management of visual resources on private land. Thus, the Poeville Alternative would not be inconsistent with any VQOs or VRM classes at KOP 9.

KOP 10

Implementation of the Poeville Alternative would be expected to result in a moderate loss of the visual quality and scenic attributes of the characteristic landscape at KOP 10. Although there are form, line, color, and texture elements visible in the characteristic landscape that would be repeated by the proposed project, the number of these elements visible from KOP 10 would increase substantially. Additionally, many of the line and color elements that would be introduced by the proposed project would be viewed against the backdrop of the middleground. The middleground is characterized by line and color elements that are unlike those that would be introduced by the proposed project. Thus, the proposed project may attract the attention of casual observers, but would be expected to remain visually subordinate to the landscape. The magnitude of contrast resulting from the proposed project would be expected to have a long-term moderate effect on visual resources at KOP 10.

The foreground of the landscape at KOP 10 that would be crossed by the Poeville Alternative consists of private land and NFS land. VQOs have also not been designated for the NFS land in other areas of the foreground distance zone, although the VMS is used for the management of visual resources in these areas. Consequently, the Poeville Alternative would not conflict with any VQOs at KOP 10 because there are no VQOs designated for the foreground.

KOP 11

The degree of contrast that the proposed project would have with the characteristic landscape would be reduced by the repetition of form, line, color, and texture elements common to the characteristic landscape of KOP 11. Although the proposed project may increase the size and amount of some elements common to the characteristic landscape, the increase would be minimal and visually subordinate. The proposed project would not be expected to attract the attention of, or dominate the view of the casual observer. Loss of the visual quality and scenic attributes of the landscape at KOP 11 would be minimal. Thus, implementation of the Poeville Alternative would be expected to have a long-term minor effect on visual resources at KOP 11.

The foreground and middleground zones of the characteristic landscape that would be crossed by the Poeville Alternative consists of private land. The background that would be crossed by the alternative consists of NFS land that is designated as Partial Retention VQO. The proposed project would repeat form, line, color, and texture elements that occur in the characteristic landscape. The proposed project would be a visually subordinate addition to the characteristic landscape of KOP 11 and would not dominate the view of the casual observer. Accordingly, the Poeville Alternative would be consistent with the VQOs assigned to the characteristic landscape.

KOP 12

The degree of contrast that the proposed project would have with the landscape of KOP 12 during operation and maintenance would be negligible because proposed pole structures would not introduce any new form, line, color, or texture elements and proposed overhead conductors would repeat elements common to the landscape. Implementation of the Poeville Alternative

would be expected to result in a negligible loss of the visual quality and scenic attributes of the existing landscape. Implementation of the Poeville Alternative would be expected to have long-term negligible effects on visual resources.

The middleground of the characteristic landscape, which would be crossed by the Poeville Alternative, consist of NFS land that has not been assigned a VQO. Consequently, the Poeville Alternative would not conflict with any VQOs at KOP 12.

KOP 13

The degree of contrast that the proposed project would have with the characteristic landscape during operation and maintenance would be minor because form, line, color, or texture elements introduced by the proposed project would repeat elements found in the characteristic landscape. Implementation of the Poeville Alternative would be expected to result in a minimal loss of the visual quality and scenic attributes of the existing characteristic landscape at KOP 13. Construction and operation and maintenance activities would be expected to have a long-term minor effect on visual resources at KOP 13.

KOP 14

Most of the elements that would be introduced during operation and maintenance of the proposed project would repeat form, line, color, and texture elements that are common to the characteristic landscape. Repetition of common form, line, color, and texture elements would reduce the degree of contrast that the proposed project would have with the characteristic landscape. Although the proposed project may increase the size and amount of some elements common to the characteristic landscape, the increase would be minimal and visually subordinate. The proposed project would not be expected to attract the attention of, or dominate the view of the casual observer. Loss of the visual quality and scenic attributes of the characteristic landscape at KOP 14 would be minimal. Thus, implementation of the Poeville Alternative would be expected to have a long-term minor effect on visual resources at KOP 14.

The foreground of the characteristic landscape at KOP 14 that would be crossed by the Poeville Alternative consists of private land. There are no VQOs or VRM classes assigned to this area because the VMS or VRM system is not used for the management of visual resources on private land. Thus, implementation of the Poeville Alternative would not be inconsistent with any VQOs or VRM classes at KOP 14.

KOP 15

Repetition of common form, line, color, and texture elements would reduce the degree of contrast that the proposed project would have with the landscape of KOP 15. Although the proposed project may increase the size and amount of some elements common to the landscape, the increase would be minimal and visually subordinate. The proposed project would not be expected to attract the attention of or dominate the view of the casual observer. Loss of the visual quality and scenic attributes of the landscape would be minimal. Implementation of the Poeville Alternative would be expected to have a long-term minor effect on visual resources at KOP 15.

The middleground and background of the landscape at KOP 15 that would be crossed by the Poeville Alternative consists of private land. There are no VQOs or VRM classes assigned to this area because the VMS or VRM system is not used for the management of visual resources on private land. Thus, implementation of the Poeville Alternative would not be inconsistent with any VQOs or VRM classes at KOP 15.

KOP 16

The degree of contrast that the proposed project would have with the landscape would be negligible because elements added by the proposed project would repeat elements common to the landscape. Increase in size and amount of elements would occur, but the increase would be minimal. The proposed project would not be expected to attract the attention of, or dominate the view of the casual observer. Loss of the visual quality and scenic attributes of the landscape at KOP 16 would be minimal. Thus, implementation of the Poeville Alternative would be expected to have a long-term negligible effect on visual resources at KOP 16.

The foreground of the landscape at KOP 16, which is the area that the Poeville Alternative would cross, consists of private land. There are no VQOs assigned to this area because the VMS or VRM system is not used for the management of visual resources on private land. Thus, implementation of the Poeville Alternative would not conflict with any VQOs or VRM classes at KOP 16.

KOP 17

The degree of contrast that the proposed project would have with the landscape would be negligible because elements added by the proposed project would repeat elements common to the landscape. Increase in size and amount of elements would occur, but the increase would be minimal. The proposed project would not be expected to attract the attention of, or dominate the view of the casual observer. Loss of the visual quality and scenic attributes of the landscape would be minimal. Thus, implementation of the Poeville Alternative would be expected to have a long-term negligible effect on visual resources at KOP 17.

The foreground at KOP 17, which is the area that the Poeville Alternative would cross, consists of private land. There are no VQOs or VRM classes assigned to this area because the VMS or VRM system is not used for the management of visual resources on private land. Implementation of the Poeville Alternative would not conflict with any VQOs or VRMs at KOP 17.

Summary

The impacts on visual resources from implementation of the Poeville Alternative would be long-term and generally negligible to minor, with the exception of KOP 10, where impacts would be moderate. Implementation of the Poeville Alternative would not conflict with the VQOs and VRM classes which have been designated for the characteristic landscapes of the KOPs. The Poeville Alternative would not cross any areas of NFS land that have been designated as Retention VQO.

3.2.3.5 Peavine/Poeville Alternative

The following KOPs were selected to analyze the visual impacts of the Peavine/Poeville Alternative:

- KOP 7 (Forest Road 41192 – North);
- KOP 15 (Truckee River Bridge);
- KOP 16 (Verdi Library Parking Lot – West); and
- KOP 17 (Verdi Library Parking Lot – East).

The section of the Peavine/Poeville Alternative that would be visible from KOP 7 is identical to the section of the Mitchell Alternative that would be visible from KOP 7. Thus, the proposed transmission line would appear identical from KOP 7 regardless of the potential implementation of the Peavine/Poeville Alternative or the Mitchell Alternative. Because the proposed transmission line would appear identical, the visual simulation prepared for KOP 7 is applicable to the Peavine/Poeville Alternative and the Mitchell Alternative. The visual contrasts and effects that the Peavine/Poeville Alternative would have on the landscape of KOP 7 during construction and operation and maintenance are the same as those that would result from the Mitchell Alternative. These contrasts and effects are described in **Section 3.2.3.2**.

The section of the Peavine/Poeville Alternative that would be visible from KOP 15, KOP 16, and KOP 17 is identical to the section of the Poeville Alternative that would be visible from these KOPs. Thus, the proposed transmission line would appear identical from these KOPs regardless of the potential implementation of the Peavine/Poeville Alternative or the Poeville Alternative. Because the proposed transmission line would appear identical, the visual simulations prepared for these KOPs are applicable to the Peavine/Poeville Alternative and the Poeville Alternative. The visual contrasts and effects that the Peavine/Poeville Alternative would have on the landscape of KOP 15, KOP 16, and KOP 17 during construction and operation and maintenance are the same as those that would result from the Poeville Alternative. These contrasts and effects are described in **Section 3.2.3.4**.

As with the Mitchell Alternative, approximately 0.47 mile of the Peavine/Poeville Alternative would cross NFS land designated as Retention VQO which is not visible from any of the KOPs. The proposed transmission line would appear identical to Mitchell Alternative within the Retention VQO and design feature VI 2 would also be implemented. Accordingly, the visual contrast resulting from the Peavine/Poeville Alternative would not conflict with the Retention VQO.

3.2.3.6 Cumulative Effects

The existing visual character of the project area (**Section 3.2.2.1**) generally describes the current landscapes within the visual resources CIAA. Present actions which have affected visual resources include existing transmission lines and utility lines (e.g., pipelines); maintenance and use of existing transportation network (roads and trails), urban development, livestock grazing, mining, and resource management activities. Reasonably foreseeable future actions within the CIAA include resource management activities.

Visual resources have been less affected from resource management activities than other present actions because forest thinning and other vegetation treatments appear to be more natural than roads, urban development, mining, and utility lines. Reasonably foreseeable future resource management activities may continue to contribute to this effect, as forest thinning and other vegetation management treatments are proposed within the CIAA.

The incremental impacts on visual resources from any of the action alternatives would have a negligible cumulative impact. The cumulative impact would be negligible because the proposed transmission line would be located within landscapes that are generally characterized by some degree of alteration from present actions. Present actions, especially existing power lines would reduce the degree of contrast that the proposed pole structures and overhead conductors would have within the landscape.

3.3 LAND USE AND PRIVATE PROPERTY

3.3.1 Issue Statement

The presence of a new transmission line adjacent to or crossing private land may reduce private property values.

a. Issue measured by: Acres of private property adjacent to or within the proposed transmission line ROW/easement.

b. Issue measured by: Estimated depreciation of property value.

3.3.2 Regulatory Framework

NFS Land

The NFS land within the analysis area is part of the Humboldt-Toiyabe National Forest and is managed under the Forest Plan (USFS 1986). The following goals and desired future conditions applicable to the analysis area are listed in the Forest Plan specifically for lands and special uses:

- Use and occupancy of the National Forest will be provided when it is consistent with management area objectives, is in the public interest, and when it cannot reasonably be served by development on private land;
- Sufficient access will be provided for public use and resource management of the National Forest;
- Issuance of SUPs will be limited to those cases which serve the public need and which cannot reasonably be met on private lands. Priority will be given to special uses which maximize public benefits including energy related uses. Any necessary mitigating measures will be incorporated into permits;
- Manage all utility, road, and transmission corridors in accordance with plans and permits issued for their construction and use. When applications for utility ROW are received, the first priority will be to utilize existing corridors;
- NFS land will not be available for uses that can be accommodated on private land;
- An environmental analysis will be required prior to adding new facilities to existing corridors. The integrity of visual quality for the corridor will be maintained to the highest

standard to minimize adverse resource and environmental impacts. Any new utility corridor not identified in the Forest Plan will be handled through the NEPA process.

BLM-Administered Public Land

BLM-administered public land within the analysis area is managed in accordance with the Eagle Lake RMP (BLM 2008b). Some goals and policies that the RMP lists regarding land use and ROW grants and that area specifically applicable to the proposed project include:

- New ROW would be located within or adjacent to existing ROW, to the extent that is practicable, in order to minimize adverse environmental impacts;
- Utility corridors included in the Western Regional Corridor Study will be available for ROW development, unless environmental analysis reveals the likelihood of significant adverse impacts on other resources. The Western Regional Corridor Study (Michael Clayton & Associates 1992) identifies the Alturas 345 transmission line alignment as an appropriate corridor for future utility ROW development. The corridor is also designated as a West-Wide Energy Corridor (U.S. Department of Energy 2008). Transmission lines of 69 kV or greater and pipelines 10 inches in diameter or greater would be located within these corridors. Corridor width would be a maximum of 2,000 feet (1,000 feet on either side of centerline), unless adjacent to an exclusion area; and
- Additional corridors may be designated as future needs dictate, subject to on-site environmental reviews and clearances.

Section 368 Energy Corridor

Per Section 368 of the Energy Policy Act of 2005, energy corridors were designated on federal land as locations preferred by federal land management agencies for future energy transport projects. Placement of a transmission facility within a designated Section 368 energy corridor generally expedites the environmental review of right-of-way applications, although compliance with NEPA and other relevant laws is still required. Within the analysis area, a corridor centered on the Alturas 345 kV line is a designated energy corridor where it overlaps public land.

Private Land

Sierra County General Plan

The 2012 Sierra County General Plan was adopted in 1996. The purpose of the General Plan is to protect Sierra County's existing qualities and address local concerns as Sierra County grows (Sierra County 1996). Essentially, the plan policies and measures require minimization of new transmission lines, or that they are efficiently located, preferably within existing ROW, that the CPUC (and other permitting authorities) ask all transmission line applicants to first obtain a preliminary approval of the proposed alignment from the County, and acquire other permits such as conditional permits. In the event that new transmission lines cannot be located to follow existing ROW, a conditional use permit may be issued, and an amendment of the Sierra County Zoning Ordinance (Sierra County 2012) may be required.

Washoe County Master Plan and Development Code

The Washoe County Master Plan sets goals, policies, and action items to guide location and use of land and transportation systems within Washoe County (Washoe County 2011). The Washoe County Master Plan includes various Area Plans to provide guidance for development intensity and character within these specific regions. Two Area Plans provide guidance for development for the portions of Washoe County within the analysis area: the North Valleys Area Plan and the Verdi Area Plan. The North Valleys Area Plan (Washoe County 2010) provides the following policy statement relating to transmission lines:

> "With the exception of temporary infrastructure for construction projects, Washoe County will require the underground placement of utility distribution infrastructure within the North Valleys Management Area. Utility transmission facilities will be subject to a special use permit."

According to the Washoe County Development Code (2013b), a SUP is required for all utility services.

City of Reno Master Plan and Annexation and Land Development Code

Portions of the analysis area are located in unincorporated Washoe County within the City of Reno Sphere of Influence (SOI), with some areas annexed to the City of Reno and within the city limits (**Figure 3.3-1**). A SUP is required for the establishment of major utility services in the City of Reno limits or SOI.

Development on private land within the City of Reno SOI, or within the City of Reno limits requires compliance with the City of Reno Master Plan (2012) and the City of Reno Annexation and Land Development Code (2005).

2012 Truckee Meadows Regional Plan

Both Washoe County and the City of Reno must show Master Plan compliance with the 2012 Truckee Meadows Regional Plan, which was adopted in 2013 and is implemented by the Truckee Meadows Regional Planning Agency (TMRPA). All projects of regional significance within Washoe County or the City of Reno must receive approval from the TMRPA in order to confirm compliance with the Truckee Meadows Regional Plan (Nevada Revised Statutes [NRS] 278.026). Pursuant to NRS 278.026, a transmission line that carries 60 kV or more is considered a project of regional significance. Stated goals and policies of the Truckee Meadows Regional Plan relating to land use authorizations and applicable to the proposed project include:

- The Truckee Meadows Regional Plan will establish, maintain, promote the use of, and protect the future expansion of identified utility corridors and sites for the transmission of electricity and promote the use of these corridors for the placement of other utilities;
- The removal of existing, or establishment of new utility corridors and sites from those shown in the Truckee Meadows Regional Plan requires an amendment of the Plan;
- To be in conformance with the Truckee Meadows Regional Plan, local-government master plans must require that proponents of utility projects, including private developers, NV Energy, or other multi-state utility-related entities, place new electrical transmission infrastructure in existing utility corridors, unless adequate justification can

be provided that demonstrates why the new infrastructure cannot be placed in an existing corridor;

- To be in conformance with the Truckee Meadows Regional Plan, local-government master plans must use the following priority hierarchy for the placement of new above ground and underground electrical transmission infrastructure:

    - Locate new above ground or underground transmission infrastructure in an existing corridor that already contains above ground transmission infrastructure, without expanding the corridor width;
    - Locate new above ground or underground transmission infrastructure in either a federally designated corridor (i.e. BLM corridor) or an easement that has an approved preliminary or final EIS;
    - Locate new above ground or underground transmission infrastructure in an existing corridor that already contains above ground transmission infrastructure, but with an expanded corridor width;
    - Request the creation of a new corridor based on the route of an existing above ground distribution line;
    - Locate new above ground transmission infrastructure within an existing corridor that already contains underground transmission infrastructure, without expanding the corridor width;
    - Locate new above ground transmission infrastructure within an existing corridor that already contains underground transmission infrastructure, but with an expanded corridor width; and
    - Request the creation of a new corridor for the placement of new transmission infrastructure where no utility infrastructure currently exists.

- To be in conformance with the Truckee Meadows Regional Plan, local-government master plans must preserve the viability of existing and future utility corridors and sites to accommodate new or expanded infrastructure by:

    - Requiring a minimum setback of 10 feet on each side of existing regional utility corridors within which structures approved after August 12, 2010, are prohibited;

- To be in conformance with the Truckee Meadows Regional Plan, local-government master plans must ensure the edge of an easement associated with a new or expanded above ground or underground electrical transmission line is a minimum of 10 feet from existing structures.

3.3.3 Affected Environment

3.3.3.1 Land Use and Ownership

All action alternatives would cross public land as well as private land (**Figure 3.3-1**). The acres and associated percentages of NFS land, BLM-administered public land, and private land within the proposed ROW/easement of each action alternative is presented in **Table 3.3-1**.

Table 3.3-1 Land Administration/Ownership within ROW/Easement

ALTERNATIVE	USFS		BLM		PRIVATE LAND		TOTAL AREA OF ROW/EASEMENT (ACRES)
	ACRES	PERCENT	ACRES	PERCENT	ACRES	PERCENT	
Mitchell	91.6	70	8.1	6	31.6	24	131.3
Peavine	76.4	66	8.1	7	31.6	27	116.1
Poeville	44.7	22	8.1	4	147.3	74	200.1
Peavine/Poeville	46.9	35	8.1	6	78.5	59	133.5

Existing land uses in the project area include dispersed recreation, timber management, firewood and Christmas tree cutting, and utilities, including an underground gas pipeline and electrical transmission and distribution lines. The Alturas 345 kV transmission line is located within a designated Section 368 energy corridor.

Use on BLM-administered public land is limited because the project area only contains the Bordertown Substation. Private land is primarily undeveloped or used for livestock grazing. The community of Verdi area is developed with residential properties including an elementary school and library.

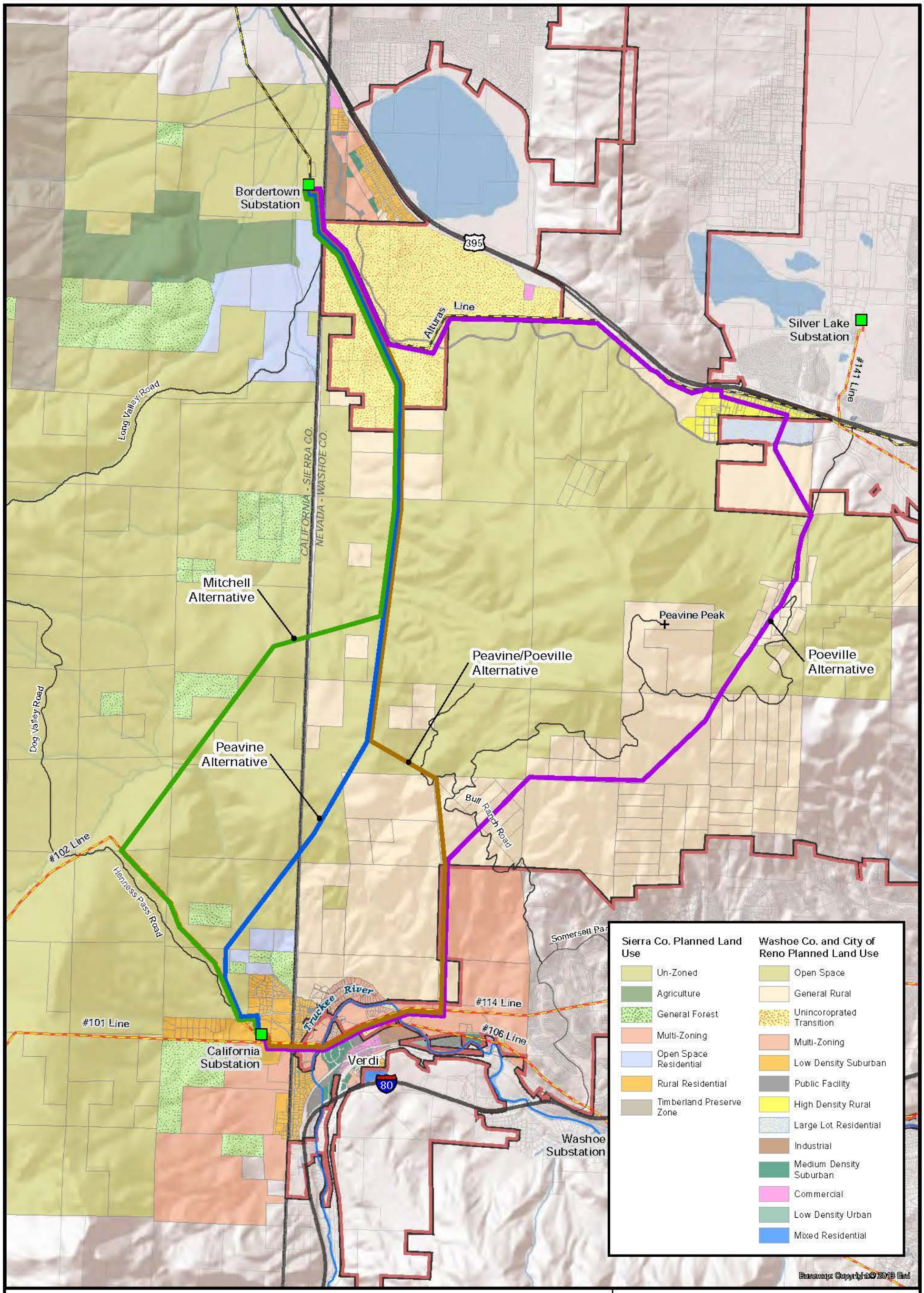
Construction of a transmission line on private land would be regulated by Sierra County, Washoe County, the City of Reno, and the TMRPA. Municipal jurisdictions crossed by alternatives are shown on **Table 3.3-2** and **Figure 3.3-1**. City of Reno SOI is shown on **Figure 3.3-2**.

Table 3.3-2 Municipal Jurisdictions Crossed by Alternatives

ALTERNATIVE	SIERRA COUNTY (MILES)	WASHOE COUNTY (MILES)	CITY OF RENO[1] (MILES)
Mitchell	6.4	3.0	2.3
Peavine	3.1	4.9	2.3
Poeville	1.1	8.2	8.7
Peavine/Poeville	1.1	6.3	4.5

[1] Includes land with the City of Reno SOI

Zoning designations within the analysis area consist of open space, various medium to large lot residential zoning designations, and public and semi-public facilities, as shown on **Figure 3.3-1** (City of Reno 2007; Washoe County 2013a; Sierra County 2013). Within portions of the project area in Washoe County, NFS land and BLM-administered public land is zoned as open space.


Bordertown Substation
395
Alturas Line
Silver Lake Substation
#141 Line
Long Valley Road
CALIFORNIA - SIERRA CO.
NEVADA - WASHOE CO.
Mitchell Alternative
Peavine Peak
Peavine/Poeville Alternative
Poeville Alternative
Dog Valley Road
Peavine Alternative
Bull Ranch Road
#102 Line
Henness Pass Road
Somersett Par
Truckee River
#114 Line
#106 Line
#101 Line
California Substation
Verdi
80
Washoe Substation
Sierra Co. Planned Land Use
Un-Zoned
Agriculture
General Forest
Multi-Zoning
Open Space Residential
Rural Residential
Timberland Preserve Zone
Washoe Co. and City of Reno Planned Land Use
Open Space
General Rural
Unincoroprated Transition
Multi-Zoning
Low Density Suburban
Public Facility
High Density Rural
Large Lot Residential
Industrial
Medium Density Suburban
Commercial
Low Density Urban
Mixed Residential
Basemap: Copyright© 2013 Esri
Transmission Line Alternatives
Mitchell
Peavine
Poeville
Peavine/Poeville
City of Reno
Existing Features
120 kV Transmission Line
345 kV Transmission Line
N
FIGURE 3.3-1
LAND USE
BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS
1 in = 1 mile
0
0.5
1
2
Miles

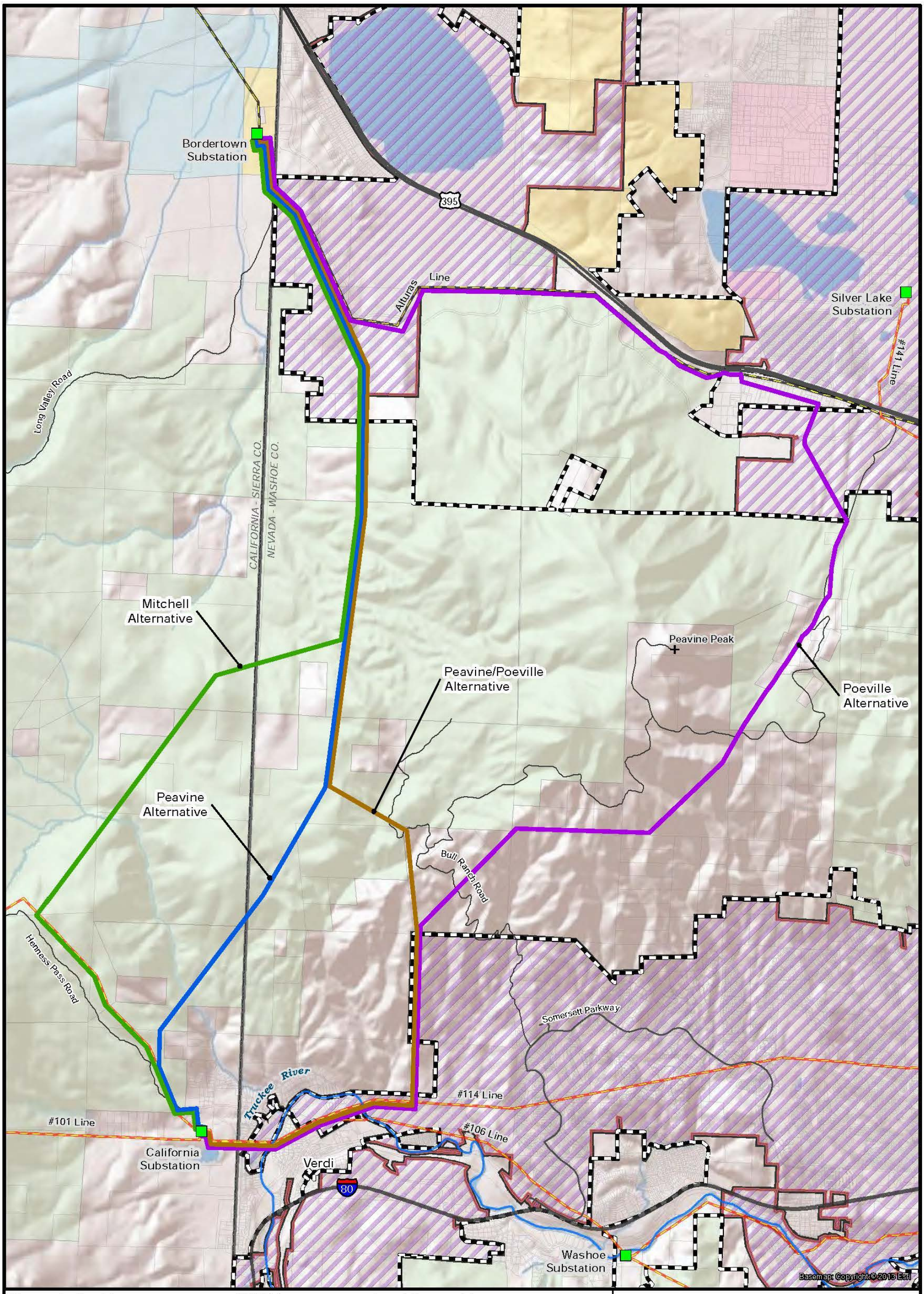


FIGURE 3.3-2
RENO SPHERE OF INFLUENCE

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

The Truckee Meadows Regional Plan designates Regional Utility Corridors within the analysis area located in Nevada. Regional Utility Corridors include the Alturas Corridor (designated West-Wide Energy Corridor), the corridor containing the existing #114 and #106 transmission lines and the inactive #632 distribution line (**Figure 2.1-1**). The Alturas corridor is a 2,000-foot wide corridor (1,000 feet on either side of centerline of the Alturas 345 kV transmission line) and the #114, #106, and #632 corridor consists of a 125-foot-wide easement with an additional 60-foot-wide easement in a portion of the Verdi Lake Estates area (BLM 2008b; Washoe County 2012; CFA, Inc. 2007). Opportunities to use existing utility corridors exist for all alternatives in the following circumstances: where single-pole under-build can co-locate an electric distribution line with the proposed transmission line; where an inactive power line, such as the #632 60 kV line can be utilized; and, where the proposed transmission line can be located within an existing ROW or easement of existing utility lines.

Table 3.3-3 presents the number of privately owned parcels along each alternative.

Table 3.3-3 Number of Privately Owned Parcels Crossed by Alternative

ALTERNATIVE	NUMBER OF PRIVATELY OWNED PARCELS CROSSED BY THE PROPOSED ROW/EASEMENT
Mitchell	13
Peavine	13
Poeville	130
Peavine/Poeville	62

Private land is zoned within its respective jurisdiction. Within portions of the project area in Washoe County, public land is zoned as open space. Zoning designations do not conflict with transmission line placement; however, a permit or plan amendment may be required where an existing designated utility corridor does not exist. **Table 3.3-4** presents the land use or zoning by action alternative, and **Figure 3.3-1** displays these land use designations.

Table 3.3-4 Land Use Category Crossed by Each Action Alternative

LAND USE OR ZONING CATEGORY	ACRES WITHIN THE PROPOSED ROW/EASEMENT			
	MITCHELL	PEAVINE	POEVILLE	PEAVINE/ POEVILLE
Multi-zoning[1]	0	0	18.7	18.7
Unincorporated Transition-40 Acre Lots (UT-40)	22.5	22.4	24.0	22.4
Large Lot Residential-2.5 Acre Lots (LLR-2.5)	0	0	2.8	0
Open Space (OS)	26.4	45.7	38.0	39.8
General Rural (GR)	8.2	10.1	76.0	25.6
High Density Rural (HDR)	0	0	9.8	0
Public and Semi-Public Facilities (PSP)	0	0	10.4	7.6
Low Density Suburban (LDS)	0	0	2.2	2.2
Open Space-20 Acres (OS-20)	2.2	2.2	2.2	2.2
Rural Residential-1.5 Acre Lots (RR-1.5)	3.1	3.1	5.2	5.2
Un-zoned Land in Sierra County	63.4	27.9	4.3	4.3

[1] In the Verdi area, the proposed transmission line would traverse parcels that are between two land use categories or split land use parcels and exact category placement cannot be determined. These areas have been classified as "Multi-zoning". The mixed or multiple zoning in this category include OS, PSP, LLR-1, GR, LDS, UT-40, Mixed and RR-1.5.

3.3.4 Environmental Consequences

3.3.4.1 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur. There would be no change in land use, and special use permits and master plan amendments would not be required.

3.3.4.2 Effects Common to All Action Alternatives

Table 3.3-5 shows utilization of existing utility corridors by action alternative including the length of the proposed ROW/easement that would be adjacent to distribution or other un-designated lines (i.e., #102 transmission line), or adjacent to designated corridors that include being within 1,000 feet of either side of the Alturas 345 kV transmission line. Note that percentages are only relevant to each action alternative.

Table 3.3-5 Use of Utility Corridors by Action Alternative

ALTERNATIVE	WITHIN 368 ENERGY CORRIDOR (MILES)	ADJACENT TO DISTRIBUTION LINES[1] (MILES)	WITHIN REGIONAL UTILITY CORRIDOR (MILES)	PERCENT WITHIN UTILITY CORRIDOR	PERCENT WITHIN REGIONAL UTILITY CORRIDOR
Mitchell	0.4	2.4	2.2	39	19
Peavine	0.4	0.6	2.2	27	21
Poeville	2.9	3.3	9.3[2]	70	52
Peavine/Poeville	0.4	0.2	4.4[2]	39	37

[1] Includes distribution lines and the #102 transmission line in Sierra County.
[2] Mileage includes 0.5 mile of proposed transmission line that would be within the #114 and #106 transmission line corridor in Sierra County, but which is not shown on the Regional Utility Corridor map since it is outside the TMRPA jurisdiction.

Conflicts with Plans, Policies, or Regulations

Each action alternative utilizes existing transmission or distribution lines as practicable; nevertheless, none fulfill any one plan or policy completely. Any alternative would require a Truckee Meadows Regional Plan Amendment, since all of the action alternatives would be located outside of a Regional Utility Corridor in at least one area (**Table 3.3-3**).

Construction of all of the alternatives would require a SUP in the City of Reno and Washoe County. In Sierra County, the transmission line would cross private property and the Sierra County Zoning Code does not specifically state that transmission lines are permitted or prohibited in these zoning districts (Sierra County 2012). However, sections of the proposed transmission line on private land in Sierra County would be co-located with existing power lines and/or utilize existing utility line corridors. Utilizing an existing utility corridor and co-locating the transmission line with other power lines is preferred when a new transmission line must be constructed in Sierra County (Sierra County 1996). It is likely that a SUP would be required for the proposed transmission line in Sierra County.

Impacts to Private Land

The number of private land parcels that would be affected from each action alternative is presented in **Table 3.3-3**. The analysis area contains two types of private land parcels that may be affected by the alternatives: 1) developed private property; and, 2) vacant and undeveloped private property. The proposed ROW/easement would limit new structures from being constructed in the ROW. Some passive uses such as parking of vehicles, landscaping and fencing within the ROW/easement would require approval by NV Energy in order to confirm compatibility with the proposed transmission line.

The Truckee Meadows Regional Plan requires a 10-foot-wide setback in which structures cannot be constructed on either side of the ROW/easement for a 120kV transmission line (TMRPA 2012). The 10-foot-wide setback on either side of the ROW/easement does not apply to existing development or development approved prior to August 12, 2010.

For all of the action alternatives, the ROW/easement would have a long-term impact on developed private property, because new structures or expanding existing structures within the ROW/easement area would be prohibited. Parcels generally larger than 1 acre would have more area to absorb the ROW/easement and the 10-foot-wide setback. Parcels generally smaller than 1 acre would have less area to absorb the ROW/easement and setback, which may reduce the area on the parcel that could be developed in the future.

Property values were evaluated in south suburban Reno to determine the impacts to private land from the construction of a 120 kV transmission line (Warren & Schiffmacher LLC 2007). Several determinations included:

- Developers and property owners will build and live on properties that are encumbered by, or adjacent to 120 kV transmission lines;
- The proximity of a property developed with an existing house to a 120 kV transmission line does not have a discernible impact on the value of the property; and
- Under certain market conditions, the existence of a 120 kV transmission line adjacent to vacant and undeveloped property may have negative impacts on property values between 10 percent and 15 percent. This is typical if the market supply exceeds the market demand.

Construction of any action alternative on land with existing homes would have negligible impacts on private property values. However, undeveloped private land has the potential to lose between 10 percent and 15 percent of its value depending on market conditions.

To minimize the loss of buildable land and minimize loss of property value, NV Energy would purchase easements based on the appraised value of the land. Land use restrictions within the ROW, and the potential loss of property value would be considered during the easement acquisition process.

3.3.4.3 Mitchell Alternative

Approximately 70 percent of the proposed ROW/easement for the Mitchell Alternative would occur on NFS land, and approximately 24 percent would occur on private land (**Table 3.3-1**). Implementation of the Mitchell Alternative is the least consistent with Forest Plan goals and objectives regarding locating projects off of NFS land and on private land when reasonably possible. The Mitchell Alternative uses 5.0 miles of utility corridors, consisting of 2.4 miles of distribution line corridor, 2.2 miles of Regional Utility Corridors, and a short section of Section 368 energy corridor where it occurs at the Bordertown Substation (**Table 3.3-5**).

There would be 13 private land parcels crossed by the proposed transmission line (**Table 3.3-3**). Eight of the parcels are within Sierra County and the other five are within either the City of Reno limits or the City of Reno SOI. One of the parcels in Sierra County is developed with a residential house that would be approximately 315 feet from the proposed transmission line. One parcel in the City of Reno limits is developed with two structures. Field observations suggest that neither structure is residential, but related to industrial uses. The nearest structure to the proposed transmission line would be approximately 930 feet away. None of the other 11 parcels that would be impacted are developed with structures.

Implementation of the Mitchell Alternative may result in long-term impacts to private property values. NV Energy would pay fair market value for the easement.

3.3.4.4 Peavine Alternative

Approximately 66 percent of the area within the proposed ROW/easement for the Peavine Alternative is NFS land, and approximately 27 percent is private land (**Table 3.3-1**). The Peavine Alternative would use 0.6 mile of distribution line corridor, 2.2 miles of Regional Utility Corridors, and a short section of Section 368 energy corridor where it occurs at the Bordertown Substation (**Table 3.3-5**).

Compared to the Mitchell Alternative, the Peavine Alternative would utilize slightly less (about 3 percent) NFS land (**Table 3.3.1**). However, relative to the total area within the proposed ROW/easement, the Peavine Alternative would utilize less private land and more NFS land than the Poeville and Peavine/Poeville Alternatives. Conflict with the Forest Plan goals and objectives regarding locating projects off of NFS land and on private land when reasonably possible would be greater for the Peavine Alternative than with the Poeville and Peavine/Poeville Alternatives.

The Peavine Alternative would cross approximately 13 private land parcels. The parcels that would be crossed are the same as those that would be crossed by the Mitchell Alternative. Thus, the impacts on private land would be the same as described for the Mitchell Alternative in **Section 3.3.4.3**.

3.3.4.5 Poeville Alternative

Approximately 22 percent of the land within the proposed ROW/easement for the Poeville Alternative would occur on NFS land and approximately 74 percent private land (**Table 3.3-1**). Because the Poeville Alternative would utilize more private land and less NFS land than the other action alternatives, it would have least conflict with the Forest Plan goals and objectives. The Poeville Alternative utilizes the most utility corridors, consisting of 13.0 miles of transmission and distribution lines, including 9.3 miles of Regional Utility Corridors and 2.9 miles of overlapping Section 368 energy corridor (**Table 3.3-5**).

It is estimated that approximately 130 private parcels would be crossed (**Table 3.3-3**). Aerial photography (U.S. Farm Service Agency 2013) suggests that two parcels in Washoe County are developed with houses and accessory structures. On both parcels, a residential house would be partially within the 10-foot setback required next to the proposed ROW/easement. Accordingly, the Poeville Alternative would not conform to the Truckee Meadows Regional Plan on either of these parcels because the edge of the proposed ROW/easement would be within 10 feet from existing structures. On one parcel in the City of Reno, a shed or garage structure would be partially located within the proposed ROW/easement.

The Poeville Alternative may have long-term impacts on the property values of private land. Based on conclusions of the Warren & Schiffmacher study, impacts on the property values of private properties developed with an existing house would be negligible. NV Energy would compensate private land owners based on fair market value to ensure that impacts to private property values would be mitigated.

3.3.4.6 Peavine/Poeville Alternative

Approximately 35 percent of the area within the proposed ROW/easement for the Peavine/Poeville Alternative would occur on NFS land, and approximately 59 percent on private land (**Table 3.3-1**). Thus, conflict with the Forest Plan goals and objectives regarding locating projects off of NFS land and on private land when reasonably possible would be less relative to the Mitchell and Peavine Alternatives.

Approximately 4.6 miles of the proposed transmission line, which is approximately 39 percent of its total length, would be located within existing utility corridors (**Table 3.3-5**). The Peavine/Poeville Alternative uses 4.4 miles of Regional Utility Corridors and a short section of Section 368 energy corridor where it occurs at the Bordertown Substation. Thus, the Peavine/Poeville Alternative would utilize fewer miles of Regional Utility Corridor and Section 368 energy corridor than the Poeville Alternative, but more than the Peavine Alternative. Approximately 62 private land parcels would be crossed by the proposed transmission line (**Table 3.3-3**). Impacts to structures from setbacks and separation requirements would not be anticipated from this alternative.

The Peavine/Poeville Alternative may result in long-term impacts to the property values of undeveloped private property as the 90-foot ROW/easement would be designated for the operation and maintenance of a transmission line. Owners would be compensated for the easement based on fair market value.

3.3.4.7 Cumulative Effects

Within the land use CIAA, ROW/easements currently exist for utilities, the Bordertown and California Substation facilities, and numerous state and county maintained roads. Additional ROW/easements also exist on private land for other agreements or commitments, such as ingress/egress and open space.

Presumably all existing ROW/easements on NFS land and BLM-administered public land have been issued in concert with existing approved resource management plans, and there have been no overall change in planned land use. However, as the density of ROW/easements increases within the CIAA, the ability to issue any additional ROW/easements or building permits may become more limited due to the potential for use conflicts. With the exception of the proposed project, there are no reasonably foreseeable future actions on NFS land or BLM-administered public land within the CIAA that would include or require a new ROW/easement to be issued. Owners of private land would be compensated for the loss of buildable land or value resulting from the proposed ROW/easement across their property. The proposed project, regardless of the action alternative selected, would have a minor contribution to cumulative impacts to land use.

3.4 PUBLIC HEALTH AND SAFETY

3.4.1 Affected Environment

3.4.1.1 Electric Fields

The potential or voltage (electrical pressure) on an object creates an electric field. The change in voltage in space over distance is a measure of electric field strength which is expressed in volts per meter or kilovolts per meter (kV/m). The electric field becomes stronger near a charged

object and decreases with distance away from the object. The strength of the electric field decreases rapidly with distance from the device. All household appliances and other devices that operate on electricity create electric fields. Typical electric fields measured 1 foot away from some common household appliances are shown in **Table 3.4-1**.

Table 3.4-1 Typical Electric Field Values for Appliances

APPLIANCE	ELECTRIC FIELD (KV/M) AT 12 INCHES AWAY
Electric Blanket	0.25
Broiler	0.13
Refrigerator	0.06
Iron	0.06
Hand Mixer	0.05
Coffee Pot	0.03

Source: (Enertech and Sheppard 2013)

Power transmission lines create electric fields from 60 Hertz (Hz) alternating currents of electricity within the conductors. The strength of the electric fields decreases with distance away from the outermost conductor. Transmission line electric fields are affected by the presence of grounded and conductive objects. Trees and buildings, for example, can significantly reduce ground level electric fields by shielding the nearby area.

3.4.1.2 Magnetic Fields

An electric current flowing in a conductor (electric equipment, household appliance, power circuits, etc.) creates a magnetic field. The most common unit of measure for magnetic field intensity is the gauss or milligauss (mG). Typical magnetic field values for some common household appliances have been measured as low as 0.3 mG to as high as 20,000 mG (**Table 3.4-2**).

Table 3.4-2 Magnetic Fields from Household Appliances

APPLIANCE	MAGNETIC FIELD AT 12 INCHES AWAY (MG)	MAXIMUM MAGNETIC FIELD (MG)
Electric Range	3 to 30	100 to 1,200
Refrigerator	0.3 to 3	4 to 15
Clothes Washer	2 to 30	10 to 400
Coffee Maker	0.8 to 1	15 to 250
Can Opener	35 to 250	10,000 to 20,000
Microwave Oven	3 to 40	65 to 812
Blender, Popper, Processor	6 to 20	250 to 1,050
Vacuum Cleaner	20 to 200	2,000 to 8,000
Hair Dryer	1 to 70	60 to 20,000
Electric Shaver	1 to 100	150 to 15,000
Fluorescent Light Fixture	2 to 40	140 to 2,000
Fluorescent Desk Lamp	6 to 20	400 to 3,500
Circular Saws	10 to 250	2,000 to 10,000
Electric Drill	25 to 35	4,000 to 8,000

Source: (Enertech and Sheppard 2013)

Power transmission lines also create magnetic fields. As is the case with an electric field, magnetic field strength attenuates rapidly with distance. Unlike electric fields, magnetic fields are not shielded by most objects or materials, including the human body.

3.4.1.3 Health-Based Standards for Electric and Magnetic Fields

Presently, there are no federal health-based standards for limiting exposure to electric and magnetic fields (EMF) due to a lack of scientific evidence establishing adverse health effects from exposure. However, science-based exposure limits have been recommended by several non-governmental organizations including American Conference of Governmental Industrial Hygienists (ACGIH), Institute of Electrical and Electronics Engineers (IEEE) International Committee on Electromagnetic Safety, and International Commission on Non-Ionizing Radiation Protection (ICNIRP) (**Table 3.4-3**).

Table 3.4-3 Recommended Limits for EMF Exposure

ORGANIZATION	EXPOSURE GROUP	ELECTRIC FIELD	MAGNETIC FIELD
ACGIH	Occupational	25 kV/m (from 0 Hz to 100 Hz)	10,000 mG
ACGIH	Occupational For workers with cardiac pacemakers or similar medical electronic devices	1 kV/m	1,000 mG
IEEE	General Public	5 kV/m[1] 10 kV/m within power line ROW[2] (from 1 Hz to 368 Hz)	9,040 mG (from 20 Hz to 759 Hz)
ICNIRP	Occupational	8.333 kV/m	10,000 mG
ICNIRP	General Public	4.167 kV/m	2,000 mG

Source: (Enertech and Sheppard 2013)
[1]At 5 kV/m induced spark discharges will be painful to approximately 7 percent of adults (well- insulated individual touching ground).
[2] Under normal load conditions.

A number of scientific review panels have been formed by government health or regulatory agencies and by non- government scientific bodies to evaluate the entire body of research on power line EMFs. The conclusions from International Agency for Research of Cancer (2002), ICNIRP (2010), and National Institute of Environmental Health Sciences (1999) and similar organizations agree that the weight of evidence supports the conclusion that EMFs are not an established cause of adverse health effects. The only scientific and medical studies that demonstrate a definite relationship between EMFs and an adverse biological or health effect are those in which very high levels of exposure to these fields produce currents and fields in the body at levels approaching a very weak electric shock. These short-term effects occur only with very high field strengths that exceed exposure guidelines designed to protect against their occurrence. Fields at these high intensities are not found in residential environments near transmission lines or elsewhere where the public has access.

3.4.1.4 Existing Conditions

Field measurements from existing electrical facilities were taken to characterize EMF strengths at various locations within the project area (**Table 3.4-4**).

Table 3.4-4 Baseline EMF Conditions within Project Area

LOCATION	FIELD MEASUREMENTS[1, 2] MIN/MAX	
	ELECTRIC FIELD (KV/M)	MAGNETIC FIELD (MG)
Alturas 345 kV Line Near Long Valley Road	2.079 to 3.360	5.3 to 10.2
#102 120 kV Line Sunrise Creek Road near Henness Pass Road	0.219 to 0.835	1.1 to 5.6
#204 25 kV Distribution Line Henness Pass Road	0.058 to 0.166	0.1 to 0.3
Alturas 345 kV Line with #257 Distribution Line Peavine Ranch, North Virginia Street	0.289 to **1.007**	4.3 to 5.6
#114/#106/#632 120 kV Line Corridor Verdi Elementary School Verdi Public Library at Bridge Street	0.064 to 0.868	1.2 to 10.9
#114/#106/#632 120 kV Line Corridor Verdi Elementary School Verdi Public Library at Ball Fields	0.010 to 0.707	0.2 to 6.7
#114/#106/#632 120 kV Line Corridor Verdi Residential Area at (west) Bridge Street	0.042 to 0.771	1.2 to 7.2
#114/#106/#632 120 kV Line Corridor Verdi Residential Area at Lakeview Drive	0.058 to 0.675	0.9 to 7.6

Source: (Enertech and Sheppard 2013)
Note: Bold indicates ACGIH recommended thresholds for workers with pacemaker would be exceeded.
[1] Range of values recorded within 50 feet from centerline; See (Enertech and Sheppard 2013) for values recorded beyond 50 feet.
[2] Measurements taken on November 8, 2012 and November 29, 2012.

3.4.2 Environmental Consequences

3.4.2.1 Methods of Analysis

Utilizing the baseline EMF measurements at selected locations (**Table 3.4-4**), computer modeling was performed to calculate electric field levels for the proposed transmission line in combination with existing adjacent transmission and distribution lines for light, medium, and maximum loads within the ROW, at the edge of the ROW, and in some cases, beyond the ROW edge. This section presents magnetic fields for maximum load conditions rather than the range of load conditions, as it represents the worst case scenario. The seven different modeling scenarios representing the possible transmission line configurations along the action alternatives are presented in **Table 3.4-5**.

Table 3.4-5 Power Line Configurations by Alternative

MODELED CONFIGURATION	ALTERNATIVE			
	MITCHELL	PEAVINE	POEVILLE	PEAVINE/ POEVILLE
Proposed Line alone as H-frame	✓	✓	✓	✓
Proposed Line alone as Single Pole	✓	✓	✓	✓
Proposed Line next to Alturas 345 kV line	✓	✓	✓	✓
Proposed Line next to #102 120 kV line	✓	✓		
Proposed Line with 25 kV distribution under-build	✓	✓		
Proposed Line with 25 kV distribution under-build next to Alturas 345 kV line			✓	
Proposed Line with #114/#106 120 kV lines and #632 de-energized line			✓	✓

Source: (Enertech and Sheppard 2013)

3.4.2.2 Effects Indicators

In the absence of federal and state EMF standards based on avoiding a health hazard at environmental exposure levels, various non-governmental organizations have recommended health-based exposure limits. Of these organizations, the lowest thresholds for EMF are those published by the ACGIH for workers with cardiac pacemakers (1 kV/m for alternating current electric fields and 1,000 mG for alternating current magnetic fields). Therefore, for purposes of this analysis, the magnitude of potential environmental effects uses the ACGIH levels as the criteria. Levels of effect are defined in **Table 3.4-6**.

Table 3.4-6 Description of EMF Effect Levels

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO EMF
Magnitude	Negligible	Alternative would cause change from the existing field conditions that are close to zero or no greater than minute-by-minute fluctuations during normal operation.
	Minor	Under 25% of ACGIH threshold for workers with cardiac pacemakers. <0.25 kV/m for electric fields and 250 mG for magnetic fields.
	Moderate	25 to 100% of ACGIH threshold for workers with cardiac pacemakers. 0.25 to 1 kV/m for electric fields and 250 to 1,000 mG for magnetic fields.
	Major	Exceeds 1 kV/m for electric fields and 1,000 mG for magnetic fields.

3.4.2.3 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur. There would be no project-related EMFs nor changes to EMF levels from existing power lines.

3.4.2.4 Mitchell Alternative

The modeled EMF levels for the Mitchell Alternative are presented in **Table 3.4-7**.

Table 3.4-7 Line Configurations for Mitchell Alternative

LINE CONFIGURATION	MILES	ABOVE/BELOW NON-REGULATORY THRESHOLD FOR ELECTRIC FIELDS
Proposed line alone as H-frame	7.0	Below threshold at ROW edges Above threshold inside ROW
Proposed line alone as single pole	Option	Below threshold at ROW edges Below threshold inside ROW
Proposed line next to Alturas 345 kV line	2.0	Below threshold at ROW edges Below threshold inside ROW
Proposed line next to #102 120 kV line	2.2	Below threshold at ROW edge furthest from #102 line Above threshold inside ROW
Proposed line with 25 kV distribution under-build	0.4	Below threshold at ROW edges Below threshold inside ROW

The measured and calculated EMF levels associated with the Mitchell Alternative are near or below recommended levels at the edges and beyond the transmission line ROW. Within the ROW, for all transmission line configurations, calculated magnetic fields are below the ACGIH recommended threshold. However, electric fields can exceed the ACGIH recommended threshold inside the ROW where the proposed transmission line uses H-frame structures (7 miles) or where it parallels the #102 line (2.2 miles). Impacts from electric fields would be moderate and minor for magnetic fields.

Risks to health and safety of the public are not expected because it is unlikely that the public would spend much time inside the ROW of the Mitchell Alternative or between the two lines where the Mitchell Alternative would be next to the #102 line, except where needed to cross under the transmission lines. In contrast, maintenance workers inspecting the proposed transmission line may spend days inside the ROW. However, levels of electric fields would be well below the ACGIH recommended threshold for workers without cardiac pace makers or similar medical devices. Provided that workers do not have a cardiac pace maker, risks to the health and safety of workers would not be expected.

3.4.2.5 Peavine Alternative

The modeled EMF levels for the Peavine Alternative are presented in **Table 3.4-8**.

Table 3.4-8 Line Configurations for Peavine Alternative

LINE CONFIGURATION	MILES	ABOVE/BELOW NON-REGULATORY THRESHOLD FOR ELECTRIC FIELDS
Proposed line alone as H-frame	7.5	Below threshold at ROW edges Above threshold inside ROW
Proposed line alone as single pole	Option	Below threshold at ROW edges Below threshold inside ROW
Proposed line next to Alturas 345 kV line	2.0	Below threshold at ROW edges Below threshold inside ROW
Proposed line next to #102 120 kV line	0.4	Below threshold at ROW edge furthest from #102 line Above threshold inside ROW
Proposed line with 25 kV distribution under-build	0.4	Below threshold at ROW edges Below threshold inside ROW

The measured and calculated EMF levels associated with the Peavine Alternative are at or below recommended levels at the proposed transmission line ROW edge and beyond. Within the ROW, for all transmission line configurations, calculated magnetic fields are below the ACGIH recommended threshold. However, electric fields can exceed the ACGIH recommended threshold inside the ROW where the proposed transmission line uses H-frame structures (7.5 miles) or where it parallels the #102 line (0.4 mile). Impacts from electric fields would be moderate and impacts from magnetic fields would be minor.

Risks to health and safety of the public are not expected because it is unlikely that the public would spend much time inside the ROW of the Peavine Alternative or between the two lines where the Peavine Alternative would be next to the #102 line, except where needed to cross under the transmission lines. In contrast, maintenance workers inspecting the proposed transmission line may spend days inside the ROW. However, levels of electric fields would be well below the ACGIH recommended threshold for workers without cardiac pace makers or similar medical devices. Provided that workers do not have a cardiac pace maker, risks to the health and safety of workers would not be expected.

3.4.2.6 Poeville Alternative

The modeled EMF levels for the Poeville Alternative are presented in **Table 3.4-9**.

Table 3.4-9 Line Configurations for Poeville Alternative

LINE CONFIGURATION	MILES	ABOVE/BELOW NON-REGULATORY THRESHOLD FOR ELECTRIC FIELDS
Proposed line alone as H-frame	5.4	Below threshold at ROW edges Above threshold inside ROW
Proposed line alone as single pole	Option	Below threshold at ROW edges Below threshold inside ROW
Proposed line next to Alturas 345 kV line	6.2	Below threshold at ROW edges Below threshold inside ROW
Proposed line with 25 kV distribution under-build next to Alturas 345 kV line	5.0	Below threshold at ROW edges Below threshold inside ROW
Proposed line with existing #114/#106 120 kV lines and #632 de-energized line	2.2	Below threshold at ROW edges Above threshold inside ROW

Source: (Enertech and Sheppard 2013)

The measured and calculated EMF levels associated with the Poeville Alternative are at or below recommended thresholds beyond the transmission line ROW, which would include the Verdi Elementary School and residential properties, such as the Peavine Ranch. Within the ROW, for all transmission line configurations, calculated magnetic fields are below the ACGIH recommended threshold. However, calculated electric fields can exceed the ACGIH recommended threshold inside the ROW where the proposed transmission line uses H-frame structures for 5.4 miles or where it would replace the #632 line inside the 114/#106/#632 line corridor (2.2 miles). Impacts from electric fields would be moderate at ROW edges and major within the ROW. Impacts from magnetic fields would be minor.

The public is not expected to spend any meaningful or substantial time inside the ROW of the Poeville Alternative where electric fields in excess of the ACGIH recommended thresholds may occur. A section where the proposed transmission line that would be next to the #114 and #106 lines would cross the Verdi Nature Trail twice, next to the Verdi Public Library. While the ACGIH threshold for electric fields would be exceeded beneath the proposed transmission line, risks to health and safety of the public would not be expected because it is unlikely that the public, including trail users, would spend time inside the ROW, except where needed to cross under the transmission line. Electric field strengths would be well below the IEEE maximum exposure limit recommended for the general public specifically for a power line ROW (10 kV), suggesting that risks from such brief exposure would be low. Levels of electric fields would be well below the ACGIH recommended threshold for maintenance workers without cardiac pace makers or similar medical devices. Provided that workers do not have a cardiac pace maker, risks to the health and safety of workers would not be expected.

3.4.2.7 Peavine/Poeville Alternative

The modeled EMF levels for the Peavine/Poeville Alternative are presented in **Table 3.4-10**.

Table 3.4-10 Line Configurations for Peavine/Poeville Alternative

LINE CONFIGURATION	MILES	ABOVE/BELOW NON-REGULATORY THRESHOLD FOR ELECTRIC FIELDS
Proposed line alone as H-frame	7.8	Below threshold at ROW edges Above threshold inside ROW
Proposed line alone as single pole	Option	Below threshold at ROW edges Below threshold inside ROW
Proposed line next to Alturas 345 kV line	2.0	Below threshold at ROW edges Below threshold inside ROW
Proposed line with existing #114/#106 120 kV lines and #632 de-energized line	2.2	Below threshold at ROW edges Above threshold inside ROW

Source: (Enertech and Sheppard 2013)

The measured and calculated EMF levels associated with the Peavine/Poeville Alternative are at or below recommended thresholds at the proposed ROW edges and beyond. Within the ROW, calculated magnetic fields are below the ACGIH recommended threshold. Calculated electric fields would exceed the ACGIH recommended threshold inside the ROW where the proposed transmission line uses H-frame structures (7.8 miles) or where it would replace the #632 line inside the 114/#106/#632 line corridor (2.2 miles). Impacts from electric fields would be moderate at ROW edges and major within the ROW. Impacts from magnetic fields would be minor.

Two segments of the Verdi Nature trail would cross the 114/#106/#632 line corridor. Risks to health and safety of the public are not expected because it is unlikely that trail users would spend time inside the ROW, except where needed to cross under the transmission line. Likewise, the public is not expected to spend time inside the ROW along other portions of the Peavine/Poeville Alternative where the thresholds may be exceeded. The levels of electric fields that would be produced under the transmission line are well below recommended thresholds for workers who do not have a cardiac pacemaker. Provided that workers do not have a pacemaker, risks to health and safety of the public would not be expected.

3.4.2.8 Cumulative Effects

A cumulative effects analysis was not conducted for public health and safety because the analysis presented in **Sections 3.4.2.4** through **3.4.2.7** accounted for all existing power lines that the proposed transmission line may have a cumulative effect on EMF. There are no other power lines within the project area proposed in the reasonably foreseeable future.

3.5 CULTURAL RESOURCES

Data Sources

Cultural resource inventories were conducted on all of the action alternatives. The Area of Potential Effect for cultural resources is a 600-foot-wide corridor centered on the proposed centerline for each action alternative. Existing roads that would be widened for construction access that are located outside the 600-foot-wide corridor were not inventoried for cultural

resources. Instead, archaeological sensitivity modeling for the construction access roads was conducted, making use of the project-specific and comparable adjacent surveys.

Regulatory Framework

The National Historic Preservation Act of 1966, as amended, the Archaeological Resources Protection Act of 1979, the American Indian Religious Freedom Act of 1978, and the Native American Graves Protection and Repatriation Act of 1990 are the primary laws regulating preservation of cultural resources. Federal regulations obligate federal agencies to protect and manage cultural resource properties. Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to take into account any action that may adversely affect any structure or object that is, or can be, included in the NRHP.

To be eligible for the NRHP (36 CFR 60), properties must be 50 years old (unless they are exceptionally important) and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. Historic properties may include places of traditional, religious, and cultural importance. They also must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of four criteria:

- Criterion A: be associated with significant historical events or trends;
- Criterion B: be associated with historically significant people;
- Criterion C: have distinctive characteristics of a style or type, or have artistic value, or represent a significant entity whose components may lack individual distinction; and
- Criterion D: have yielded or have potential to yield important information.

The purpose of the Archaeological Resources Protection Act of 1979 is to secure the protection of archaeological resources and sites that are on public lands and Indian lands and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources.

The American Indian Religious Freedom Act was passed in 1978 to "protect and preserve for American Indians their inherent right to freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites."

The Native American Graves Protection and Repatriation Act became law in 1990; the regulations implementing the statute were completed and went into effect in January 1996. This law formally affirms the rights of Indian tribes, Native Alaskan entities, and Native Hawaiian organizations to custody of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony with which they have a relationship of cultural affiliation. In addition, the law and regulations describe procedures designed to ensure that all Americans can derive educational, historical, and scientific value from the remains and objects covered by the statute through public interpretation, documentation, and study.

A Traditional Cultural Property (TCP) is a property associated with cultural practices or beliefs of a living community that: (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (Parker & King 1998). This property type may be determined eligible for the NRHP if it meets criteria found in 36 CFR 60.4.

3.5.1 Affected Environment

Cultural resources are defined as any definite location of past human activity identifiable through field survey, historical documentation, and/or oral evidence. Cultural resources have many values and provide data regarding past technologies, settlement patterns, subsistence strategies, and many other aspects of history. The term "cultural resources" can apply to "those parts of the physical environment – natural and built – that have cultural value of some kind to some sociocultural group." This term includes archaeological resources, historic resources, historical objects, Native American cultural items, spiritual places, religious practices, cultural uses of the natural environment, community values, or historical documents (King 1998).

3.5.1.1 Cultural Context

A number of authoritative overviews and reports (e.g., Delacorte 1997; Elston 1982, 1986, 1994; Elston, Davis, Leventhal, & Covington 1977; Grayson 1993; Jackson, Jackson, Miksicek, Roper, & Simons 1994; McGuire 2000, 2002; Moore & Burke 1992; Pendleton, McLane, & Thomas 1982; Raven 1984; Thomas 1982) summarize the history of archaeological research in this region of the western Great Basin and Northeastern California. A regional framework regarding prehistory, ethnography, and history was also provided in the project-specific cultural resource inventory (Garner, Young, & Rice 2013) and was summarized in the specialist report (USFS 2014a).

3.5.1.2 Cultural Resource Inventories

Project-specific cultural resource inventories identified sites that are listed on the NRHP, sites eligible for listing on the NRHP, and unevaluated sites. Unevaluated sites are assumed to be NRHP-eligible pending further investigation. Site types encountered in the cultural resource inventories included historic, prehistoric, and multi-component. Historic site types are predominantly debris scatters but also include a ranch, mining features, roads, fences, a trail, water diversion features (flume/ditches/canals), a culvert/rock wall, and a railroad. Prehistoric site types include lithic scatters and groundstone scatters. The multi-component sites are combinations of the above site types, such as a lithic scatter and historic debris scatter.

No Traditional Cultural Properties have been identified in the project area by previous studies. Therefore, discussion of Traditional Cultural Properties is not being carried forward in the impact analysis.

3.5.1.3 Mitchell Alternative

A total of 31 cultural resource sites were encountered along the Mitchell Alternative during the project-specific inventories. The majority of the sites encountered are historic sites (16) with 7 prehistoric sites, 7 multi-component sites (both historic and prehistoric), and 1 site of unknown type also recorded. Of the 31 sites, 7 are considered eligible for the NRHP, 23 are considered not eligible, and the eligibility status of 1 site is unknown (**Table 3.5-1**) (USFS 2014a).

Approximately 11.1 miles of roads would be widened for construction access for the Mitchell Alternative. Approximately 4.7 miles or 43 percent of proposed road improvement mileage traverses landforms with high sensitivity for cultural resources. Sensitivity modeling predicts 0.27 sites per mile in the high sensitivity area. Moderate sensitivity area comprises 2.48 miles or 22 percent and low sensitivity area includes 3.91 miles or 35 percent of roads proposed for widening. The sensitivity model predicts 0.16 and 0.07 sites in the moderate and low sensitivity areas, with modeled site expectations of 0.06 and 0.02 sites per mile, respectively. Therefore, under the Mitchell Alternative, an additional 1.49 cultural sites would be expected to be present along existing roads that would require widening (**Table 3.5-1**).

Table 3.5-1 Cultural Resource Summary for Mitchell Alternative

ELIGIBLE SITES	NON-ELIGIBLE SITES	SITES WITH UNKNOWN ELIGIBILITY STATUS	MODELED SITES ALONG ROADS TO BE WIDENED	TOTAL
7	23	1	1.49	32.49

3.5.1.4 Peavine Alternative

A total of 33cultural resource sites were encountered along the Peavine Alternative during the project-specific inventories. The majority of the sites encountered are historic sites (15) with 11 prehistoric sites, 6 multi-component sites (both historic and prehistoric), and 1 site of unknown type also recorded. Of the 33sites, 7 are considered eligible for the NRHP, 25 are considered not eligible and the eligibility status of 1 site is unknown (**Table 3.5-2**) (USFS 2014a).

Approximately 20.79 miles of roads would be widened for construction access under the Peavine Alternative. The majority of the road widening for the Peavine Alternative (9.46 miles or 46 percent) traverses low sensitivity, relatively rugged and undulating, terrain where the model predicts 0.02 sites per mile. However, approximately 7.1 miles (34 percent) of proposed road widening traverses landforms with high sensitivity for cultural resources where the model predicts 0.27 sites per mile. The 4.2 miles of road widening passes through moderate sensitivity level terrain with an expected 0.06 sites per mile. Therefore, under the Peavine Alternative, an additional 2.35 cultural sites would be expected to be present along existing roads that would require widening (**Table 3.5-2**).

Table 3.5-2 Cultural Resource Summary for Peavine Alternative

ELIGIBLE SITES	NON-ELIGIBLE SITES	SITES WITH UNKNOWN ELIGIBILITY STATUS	MODELED SITES ALONG ROADS TO BE WIDENED	TOTAL
7	25	1	2.35	35.35

3.5.1.5 Poeville Alternative

A total of 53 cultural resource sites were encountered along the Poeville Alternative during the project-specific inventories. The majority of the sites encountered are prehistoric sites (28) with 21 historic sites and 4 multi-component sites (both historic and prehistoric) also recorded. Of the 53 sites, 1 site is listed on the NRHP, 11 are considered eligible for the NRHP and 41 are considered not eligible (**Table 3.5-3**). The Peavine Ranch is the site listed on the NRHP under Criterion A and C due to its association with prominent individuals and industry significant in local history. The Poeville Alternative encounters the Peavine Ranch (26Wa2688) on the north slopes of Peavine Peak near Highway 395.

Approximately 24.17 miles of roads would be widened for construction access under the Poeville Alternative. This represents the second highest amount of road widening mileage of the four alternatives. The majority (14.15 miles or 58 percent) of the proposed road widening is situated on low sensitivity terrain with modeled prediction of 0.02 sites per mile. High sensitivity areas make up 24 percent of the road widening mileage at 5.66 miles. The model predicts 0.27 sites per mile in these areas. Moderate sensitivity areas are intermittently distributed between high and low probability areas in the amount of 4.37 miles (18 percent); the model predicts 0.06 sites per mile. Therefore, under the Poeville Alternative, an additional 2.05 cultural sites would be expected to be present along existing roads that would require widening (**Table 3.5-4**).

Table 3.5-3 Cultural Resource Summary for Poeville Alternative

ELIGIBLE SITES	NON-ELIGIBLE SITES	SITES WITH UNKNOWN ELIGIBILITY STATUS	MODELED SITES ALONG ROADS TO BE WIDENED	TOTAL
12	41	0	2.05	55.05

3.5.1.6 Peavine/Poeville Alternative

A total of 40 cultural resource sites were encountered along the Peavine/Poeville Alternative during the project-specific inventories. The sites encountered include 15 historic sites, 17 prehistoric sites, 7 multi-component sites (both historic and prehistoric), and 1 site of unknown type. Of the 40 sites, 14 are considered eligible for the NRHP (includes unevaluated sites), 25 are considered not eligible, and the eligibility status of 1 site is unknown (**Table 3.5-4**).

The Peavine/Poeville Alternative would require the most road widening mileage at approximately 26.08 miles. The majority (13.99 miles or 54 percent) of the proposed road widening is situated on low sensitivity terrain with a modeled prediction of 0.026 sites per mile. High sensitivity areas make up 27 percent of the road widening mileage at 7.21 miles where the model predicts 1.92 sites at 0.27 sites per mile. Approximately 4.89 miles (18 percent) of road widening would be in moderate sensitivity areas with an expectation of 0.07 sites per mile. Therefore, under the Peavine/Poeville Alternative, an additional 2.50 cultural sites would be expected to be present along existing roads that would require widening (**Table 3.5-4**).

Table 3.5-4 Cultural Resource Summary for Peavine/Poeville Alternative

ELIGIBLE SITES	NON-ELIGIBLE SITES	SITES WITH UNKNOWN ELIGIBILITY STATUS	MODELED SITES ALONG ROADS TO BE WIDENED	TOTAL
14	25	1	2.5	42.5

3.5.2 Environmental Consequences

Methods of Analysis

Assessment of potential effects or impacts on cultural resources is based on the National Historic Preservation Act of 1966 regulations that define an effect as a direct or indirect alteration to the characteristics of a "historic property" that qualify it for inclusion in the NRHP. Adverse effects diminish the integrity of a property's location, setting, design, materials, workmanship, feeling, or association.

As defined in 36 CFR 800.5, adverse effects on historic properties include, but are not limited to:

i. Physical destruction of or damage to all or part of the property;

ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines;

iii. Removal of the property from its historic location;

iv. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

v. Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;

vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

vii. Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Where project-specific inventories were conducted, the number of NRHP-eligible sites potentially impacted has been presented. Where project-specific site data was not available, a quantified prediction of impacts to sites (of unknown eligibility) was calculated based on sensitivity modeling conducted for this project (Garner et al. 2014).

The following indicators were considered when analyzing potential impacts to historic properties (i.e., NRHP-eligible cultural resources):

- The number of NRHP-eligible or unevaluated sites impacted; and
- The number of modeled sites of unknown eligibility potentially impacted.

3.5.2.1 Effects Common to All Action Alternatives

Potential impacts to cultural resources that are common to the action alternatives include the following:

- Direct and indirect impacts to prehistoric and historic sites, including unevaluated sites;
- Discovery of unanticipated finds during construction;
- Discovery of human remains during construction; and
- Unauthorized artifact collection and vandalism.

Prehistoric and historic sites eligible for listing in the NRHP are distributed throughout the project area. Construction of the action alternatives may have direct effects on sites from excavation, grading, and other types of ground surface and subsurface disturbance. In forested communities, trees under transmission line wires would be removed for the life of the project for safety purposes. Logging activities during construction and throughout the maintenance phase of the project may have direct effects on NRHP-eligible sites due to tree falls, skidding, construction of log landings, and trimming/brushing activities. Once constructed, the presence of the transmission line may also have direct effects on the visual setting of NRHP-eligible sites, especially those listed or deemed eligible based in large part on integrity of setting.

Construction of any of the action alternatives may have indirect effects on NRHP-eligible prehistoric and historic sites. Where ground disturbance results in increased erosion of surrounding landforms, archaeological contexts and data potential may be altered via displacement of artifacts and features. Additionally, unauthorized use of construction access roads by the public would increase the potential for public access to archaeological resources. Increased public access might result in unauthorized artifact collection.

Design Features to Avoid or Minimize Direct Effects

Project design features to protect cultural resources (CU 1 through CU 7) are presented in **Appendix B**. Design features require that all NRHP-eligible sites be avoided where practicable. If such sites cannot be avoided and are determined to be adversely affected, a Historic Properties Treatment Plan (HPTP) would be developed that includes testing and/or mitigation of sites.

During construction activities, any unanticipated cultural resources discovered would require that all work within a 300-foot area cease immediately and the USFS Authorized Officer be notified immediately. USFS would then evaluate the discovery in coordination with other consulting parties in order to determine and implement appropriate treatment, if necessary. Design features also require the presence of monitors, including Tribal monitors as appropriate, who would work with construction crews when crews are within 600 feet of the boundary of a known eligible site.

All components of the final project design that were not included in the baseline cultural resource inventory, such as road widening areas, would be fully inventoried and Section 106

satisfied prior to any project related disturbance. If avoidance is not feasible, design features require that a HPTP that includes mitigation would be developed and implemented.

Table 3.5-5 presents the known NRHP-eligible and unevaluated sites by alternative. For unevaluated sites, the determination of eligibility would be made if complete avoidance is not possible. In the meantime, the unevaluated properties may be managed as eligible pending future investigations.

Table 3.5-5 Protection Measures for Known NRHP-Eligible and Unevaluated Sites

STATE TRINOMIAL	HUMBOLDT-TOIYABE FOREST NO.	ELIGIBILITY	SITE TYPE	PRIMARY MEASURE	SECONDARY MEASURE	ALTERNATIVE
26Wa103/112/1076	-	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Peavine; Peavine/Poeville
26Wa111/1082	04170115924	Eligible	Multi-component	Avoidance; Monitoring	HPTP	Mitchell; Peavine; Peavine/Poeville
26Wa119/128/1053	-	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Peavine; Peavine/Poeville
26Wa2524	04170113300	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Poeville
26Wa2688	-	NRHP Listed - A	Historic	Pole placement; line height	Interpretation	Poeville
26Wa6207	04170104032	Eligible D	Multi-component	Avoidance; Monitoring	HPTP	Mitchell; Peavine; Poeville; Peavine/Poeville
26Wa6271	04170113412	Eligible D	Multi-component	Avoidance; Monitoring	HPTP	Poeville
26Wa6272	-	Eligible D	Prehistoric	Avoidance; Monitoring	HPTP	Poeville
26Wa8471	04170105928	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Poeville; Peavine/Poeville
26Wa8472	TY-5929	Eligible	Multi-component	Avoidance; Monitoring	HPTP	Peavine; Peavine/Poeville
26Wa9573	04170113296	Eligible D	Prehistoric	Avoidance; Monitoring	HPTP	Peavine; Peavine/Poeville
26Wa9574	04170113297	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Peavine/Poeville
26Wa9575	04170113298	Unevaluated	Multi-component	Avoidance; Monitoring	Evaluation; HPTP	Peavine/Poeville
26Wa9593	-	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Poeville; Peavine/Poeville
26Wa9594	-	Unevaluated	Historic	Avoidance; Monitoring	Evaluation; HPTP	Poeville; Peavine/Poeville
26Wa9604	-	Eligible D	Multi-component	Avoidance; Monitoring	HPTP	Mitchell; Peavine; Poeville; Peavine/Poeville
26Wa9612	-	Unevaluated	Prehistoric	Avoidance; Monitoring	Evaluation; HPTP	Peavine/Poeville
26Wa9626	04170100333 / 1837	Segment B and C contributing;	Historic	Avoidance; Monitoring	HPTP	Mitchell; Peavine; Poeville;

STATE TRINOMIAL	HUMBOLDT-TOIYABE FOREST NO.	ELIGIBILITY	SITE TYPE	PRIMARY MEASURE	SECONDARY MEASURE	ALTERNATIVE
		others non-contributing				Peavine/Poeville
CA-SIE-802H	TY-3245;TY-124	Unevaluated	Historic	Avoidance; Monitoring	Evaluation; HPTP	Mitchell
CA-SIE-823H	TY-3250	Unevaluated	Historic	Avoidance; Monitoring	Evaluation; HPTP	Mitchell; Peavine
CA-SIE-1756/H	04170113290	Eligible D	Multi-component	Avoidance; Monitoring	HPTP	Mitchell

Design Features to Avoid or Minimize Indirect Effects

The potential for soil erosion that may displace artifacts would be minimized through the implementation of Best Management Practices (BMPs) and immediate restoration of project-related surface disturbance. Design features developed for water and soil resources (WA 1 and WA 2) ensure that a SWPPP would be implemented. The effectiveness of erosion controls and the success of re-vegetation would be monitored and remedial actions would be taken, as necessary.

The implementation of design features developed for recreation resources and transportation (RT 3 through RT 7) would reduce the potential for unauthorized travel on restored roads which, in turn, would reduce the potential for unauthorized artifact collection and vandalism. All new temporary construction access roads would be restored immediately following construction. Restored roads on NFS land would have a physical closure (i.e., barricade) installed immediately to prevent unauthorized vehicle use from occurring on reclaimed roads. The effectiveness of barricades and the success of re-vegetation would be monitored and remedial actions would be taken, as necessary.

Mitigation

If avoidance of all NRHP eligible properties is not possible, an HPTP would be prepared and implemented.

3.5.2.2 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur; therefore, there would be no impacts to NRHP-eligible or potentially eligible cultural resource sites from the proposed project.

3.5.2.3 Mitchell Alternative

Under the Mitchell Alternative, seven NRHP-eligible sites are located along the alternative and road-widening areas. Any number of the modeled sites within the road widening corridors may be NRHP-eligible. All NRHP-eligible sites would be avoided if possible. If avoidance is not feasible, mitigation would be conducted. Impacts would be negligible to minor and long-term.

No additional direct impacts to NRHP-eligible cultural resources from operations and maintenance would be anticipated after construction.

Mitigation

If avoidance of NRHP-eligible sites is not possible, preparation and implementation of an approved HPTP would be required.

3.5.2.4 Peavine Alternative

Under the Peavine Alternative, seven NRHP-eligible sites are located along the alternative and road-widening areas. Any number of the modeled sites within the road widening corridors may also be NRHP-eligible sites. Impacts would be similar to those described under the Mitchell Alternative.

Mitigation

If avoidance of NRHP-eligible sites is not possible, preparation and implementation of an approved HPTP would be required.

3.5.2.5 Poeville Alternative

Under the Poeville Alternative, 1 NRHP-listed site and 11 NRHP-eligible sites are located along the alternative and road-widening areas. Any number of the modeled sites within the road widening corridors may also be NRHP-eligible sites.

The Peavine Ranch is a NRHP-listed site along the Poeville Alternative; it is the only listed property along any alternative. The Peavine Ranch is listed on the NRHP under Criterion A and C due to its association with prominent individuals and early ranching and agricultural history of the Truckee Meadows. Project design features specific to the Poeville Alternative were developed through consultation between the USFS and the Nevada SHPO to off-set potential effects to the historic setting of the Peavine Ranch. Should the Poeville Alternative be selected the following design features would be implemented to minimize visual impacts:

CU 8. In front of the Peavine Ranch, the new transmission line conductors will be installed (approximately 65 feet high instead of the current 40 feet high) on the poles, resulting in less visual impact than the existing poles with electrical and phone wires.

CU 9. Pole placement along the existing distribution line in front of Peavine Ranch will be placed so they are more compatible with the landscape and not in direct view of the Ranch House.

CU 10. Work with NV Bell to replace the heavy “black” telephone line that is presently wrapped and to co-locate telephone and power on the same poles to reduce visual range from the Peavine Ranch House.

CU 11. Additional mitigation strategies at this site may include clean-up of all the debris, natural and frontage, inspection of drainage system (both directions), possible corrections of drainage problems, installation of gates at property and frontage fencing for improved

security, and the addition of landscape (trees) of the same species after removal of one of the trees that was planted as mitigation as it has been pruned to half its normal shape.

CU 12. Other possible mitigation measures include off-site and public participation; an expanded ranching context for the area surrounding Peavine Ranch with emphasis on the development of ranching within this geographic area; and a State historical marker well away from the Peavine Ranch which discusses ranching in general in the area.

Mitigation

If avoidance of NRHP-eligible sites is not possible, preparation and implementation of an approved HPTP would be required.

3.5.2.6 Peavine/Poeville Alternative

Under the Peavine/Poeville Alternative, 14 NRHP-eligible sites are located along the alternative and road-widening areas. Any number of the modeled sites within the road widening corridors may also be NRHP-eligible sites.

3.5.2.7 Cumulative Effects

Unauthorized OHV recreation may have inadvertently impacted cultural resources within the CIAA. Impacts may have included direct damage or alteration of artifacts from crushing or disturbance beneath OHV tires. Unauthorized OHV recreation continuing into the reasonably foreseeable future would be expected to have adverse impacts on additional cultural resources.

It is unknown whether the construction of the existing utility lines, transportation network, agricultural development, livestock grazing, and urban development within the CIAA directly impacted unknown cultural resources. However, these present actions have definitively impacted the visual setting of cultural resources, especially those sites listed or deemed eligible for inclusion on the NRHP based in large part on integrity of setting. The Alturas 345 kV transmission line has changed the viewshed of the Peavine Ranch historic property. Other present actions, including existing roads and limited residential development were constructed within the viewshed of the property prior to its inclusion on the NRHP.

Cumulative impacts from any of the action alternatives would be negligible because alternatives include design features when appropriate to minimize impacts to the viewsheds of cultural sites, and mitigation measures in the event that cultural sites cannot be avoided. Unknown cultural resources will continue to be impacted and disturbed due to livestock grazing and unauthorized OHV recreation. According to the Environmental Assessment prepared for the Dog Valley Fuels Reduction and Ecosystem Enhancement Project (USFS 2009), there would not be any direct adverse impacts on cultural resources from the project. The Dog Valley Fuels Reduction and Ecosystem Enhancement Project, as well as other reasonably foreseeable future resource management activities would be conducted by the USFS, and thus under the oversight of Section 106 of the NHPA. Section 106 of the NHPA requires avoidance and/or mitigation of impacts to Historic Properties by federal undertakings.

Mitigation

If avoidance of NRHP-eligible sites is not possible, preparation and implementation of an approved HPTP would be required.

3.6 WATER RESOURCES AND SOILS

The analysis area for water resources and soils consists of the 300- to 600-foot-wide variable-width corridor and the road widening corridor of each action alternative.

3.6.1 Affected Environment

3.6.1.1 Watersheds and Streams

As displayed on **Figure 3.6-1**, the project area spans two major watersheds: Truckee watershed and Honey-Eagle Lakes watershed. Streams within the southern portion of the project area are within the Truckee watershed and include the Truckee River. Streams in the northern portion of the project area are within the Honey-Eagle Lakes watershed, and drain to Long Valley Creek, White Lake, or Silver Lake. The total number of perennial, intermittent, and ephemeral streams within the analysis area of each action alternative is presented in **Table 3.6-1**. The table also presents the amount of the total number of streams that occur on NFS land within the analysis area. There are no streams of any type on public land administered by the BLM within the analysis area of any action alternative.

Table 3.6-1 Number of Streams within Analysis Area of Action Alternatives

STREAM FLOW REGIME	MITCHELL		PEAVINE		POEVILLE		PEAVINE/ POEVILLE	
	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL
Perennial	1	2	1	3	0	4	0	3
Intermittent	1	1	1	1	0	1	0	0
Ephemeral	7	8	11	16	8	19	9	15
Total	9	11	13	20	8	24	9	18

Sources: JBR field investigation, U.S. Geological Survey topographic maps (1967a; 1967b; 1978; 1981), and aerial photography (U.S. Farm Service Agency 2013)

The perennial streams within the analysis areas of the Mitchell and Peavine Alternatives include Sunrise Creek and Dog Creek, both of which are within the Truckee watershed. The analysis area of the Peavine Alternative also includes an additional perennial stream, Bull Ranch Creek. Perennial streams within the analysis areas of the Poeville and Peavine/Poeville Alternative include Sunrise Creek, Bull Ranch Creek, and the Truckee River. The analysis area of the Poeville Alternative also includes an additional perennial stream, Jones Creek.

3.6.1.2 Riparian Zones and Wetlands

Intermittent and perennial streams identified in **Table 3.6-1** support wetland riparian zones. The wetland riparian zone of the largest streams is dominated by willow shrubs, while riparian zones of smaller streams are dominated by wetland grasses and forbs (i.e., wet meadow). A few

isolated springs and seeps are present outside of stream zones and are generally dominated by grasses and forbs. **Table 3.6-2** shows the acreage of wetlands, which includes the wetland riparian zones and off-channel wetlands that are found within the variable-width corridor and road widening corridor for each action alternative.

Table 3.6-2 Acres of Wetlands within Analysis Area

ANALYSIS AREA	MITCHELL		PEAVINE		POEVILLE		PEAVINE/ POEVILLE	
	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL
Variable-Width Corridor	0.6	13.7	0.1	13.2	3.9	14.1	1.1	21.8
Road Widening Corridor	1.0	1.1	1.1	1.4	0	0.2	1.1	1.3
Total	1.6	14.8	1.2	14.6	3.9	14.3	2.2	23.1

Sources: USFS GIS data (USFS 2005; 2008a) and JBR field investigation

3.6.1.3 Waters of the United States and Waters of the State

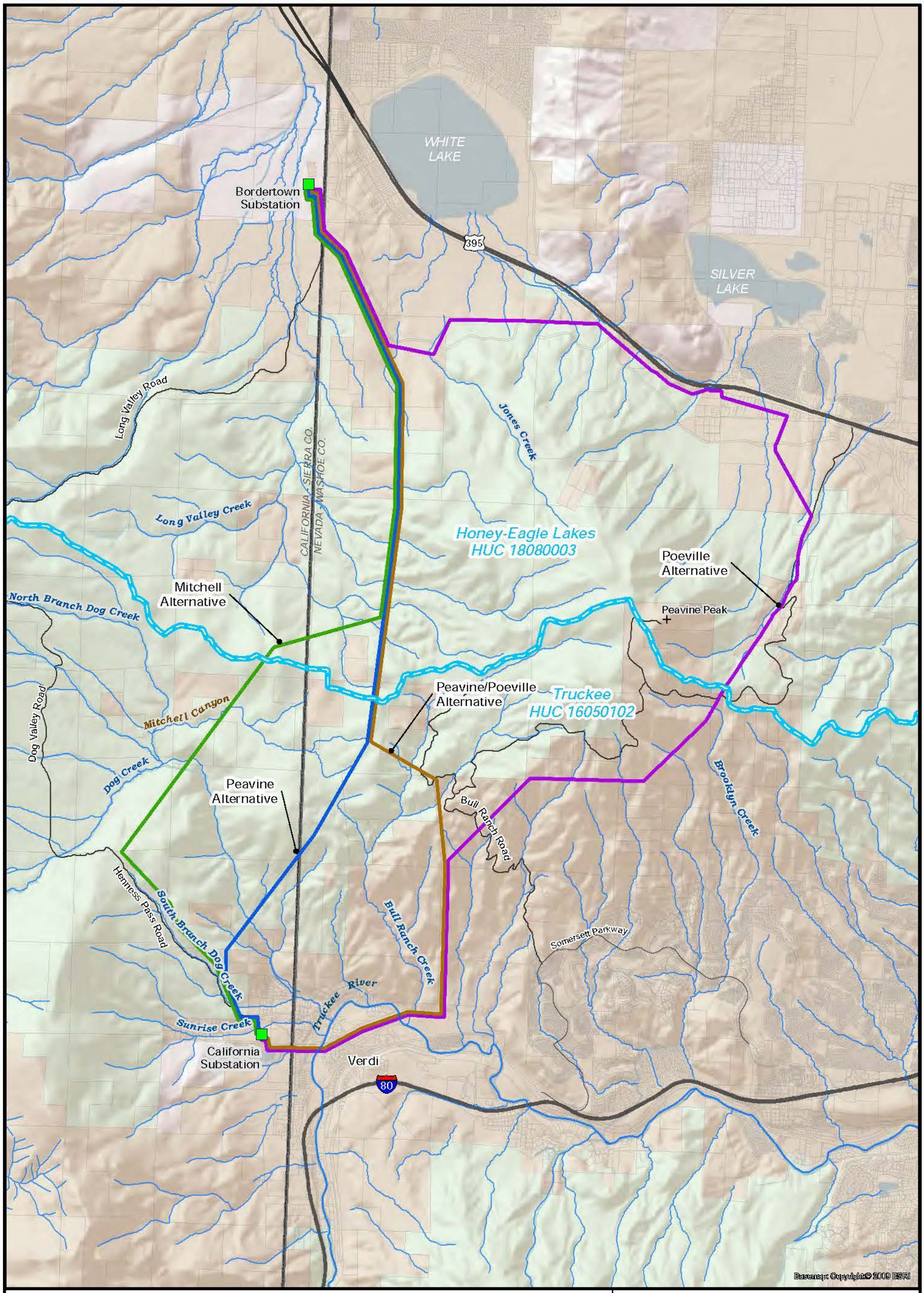
Not all streams and wetlands within the analysis area would be considered a water of the United States subject to regulation under the Clean Water Act of 1977, as amended. Federal jurisdiction would be limited to stream segments that cross the California and Nevada State line, tributary streams to the Truckee River, and wetlands adjacent to these tributary streams. Regardless of their federal status, all surface waters and wetlands within the analysis area would be considered waters of the State where they occur.

3.6.1.4 Floodplains

The Federal Emergency Management Agency (FEMA) regulations (44 CFR 59.1) define "special flood hazard areas" as areas of land within a floodplain that is subject to a 1 percent or greater chance of inundation from a flood in any given year (also referred to as the base flood or 100-year flood). Special flood hazard areas are delineated on flood insurance rate maps by FEMA. Special flood hazard areas within the analysis area have been mapped on FEMA flood insurance rate map panels 06091C500C (2012), 32031C2813H (2013a), 32031C2814H (2013b), and 32031C3013G (2009). These special flood hazard areas are associated with the Truckee River, Dog Creek, Jones Creek, and several unnamed intermittent and ephemeral tributaries of White Lake located east and west of Jones Creek.

3.6.1.5 Soils

According to the Natural Resources Conservation Service (NRCS) (2012), there are more than 100 different soil mapping units within the analysis area. Using soil erosion K factor, slope, and rock fragment content, the NRCS rates soil units according to the potential for soil loss from un-surfaced roads and trails. The possible rating categories which are used include: slight, moderate, and severe. Most of the soils within the analysis area of each action alternative have been rated as severe (**Figure 3.6-2**). A rating of "severe" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed (NRCS 2012).


WHITE LAKE
SILVER LAKE
Bordertown Substation
395
Long Valley Road
CALIFORNIA - SIERRA CO.
NEVADA - WASHOE CO.
Jones Creek
Long Valley Creek
Honey-Eagle Lakes HUC 18080003
Poeville Alternative
Mitchell Alternative
North Branch Dog Creek
Peavine Peak
Peavine/Poeville Alternative
Truckee HUC 16050102
Dog Valley Road
Mitchell Canyon
Dog Creek
Peavine Alternative
Bull Ranch Road
Brooklyn Creek
Hennes Pass Road
South Branch Dog Creek
Bull Ranch Creek
Somersett Parkway
Truckee River
Sunrise Creek
California Substation
Verdi
80
Basemap Copyright© 2009 ESRI
Transmission Line Alternatives
Mitchell
Peavine
Poeville
Peavine/Poeville
Watershed Boundary
USGS Hydrologic Unit
Stream
Land Ownership
U.S. Forest Service
Private Land
N
FIGURE 3.6-1
WATERSHED
BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS
1 " = 1 mile
0
0.5
1
2
Miles

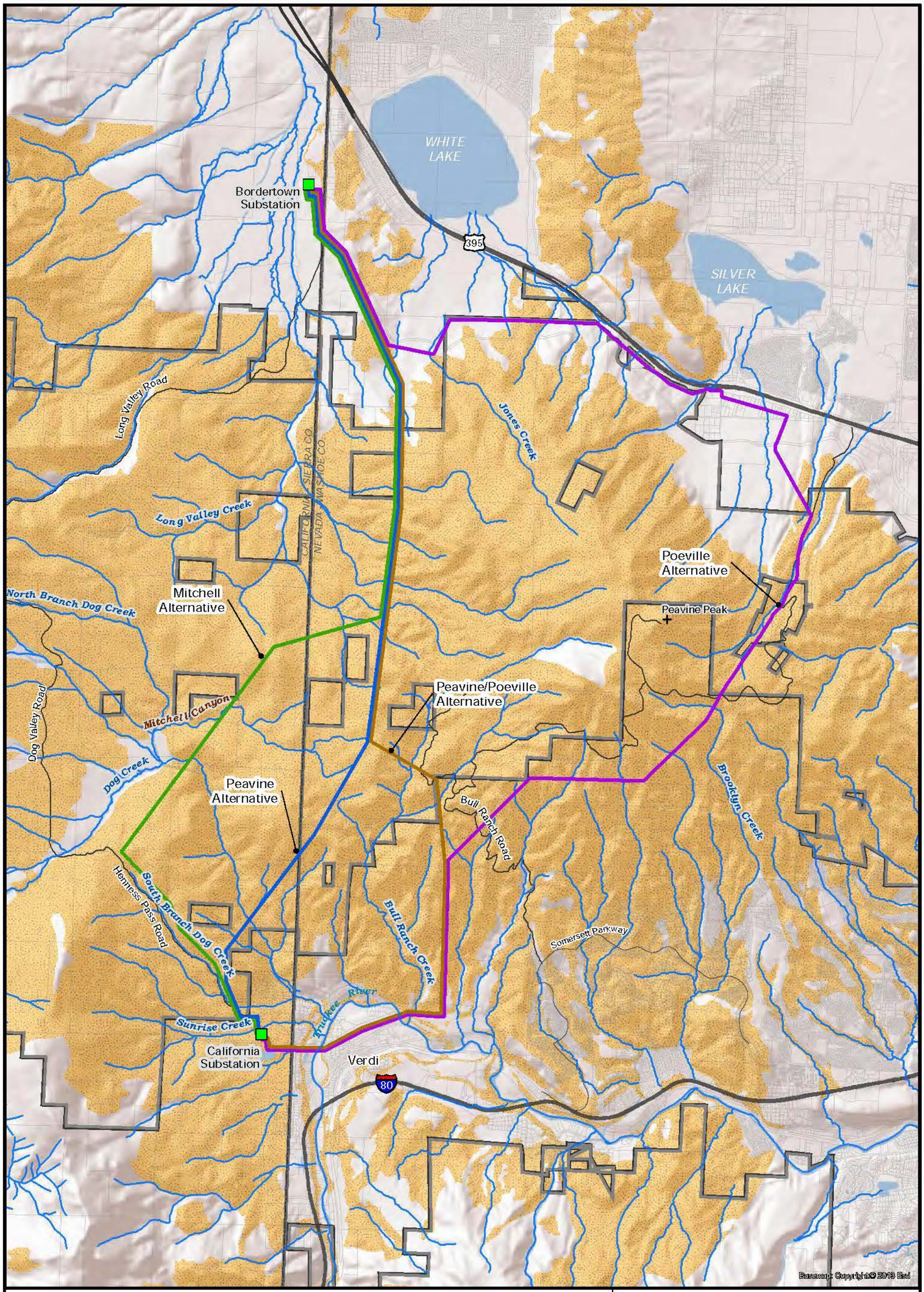


FIGURE 3.6-2
EROSION HAZARD

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

3.6.2 Environmental Consequences

Methods of Analysis

The following effect indicators were used for the evaluation of potential effects for each alternative:

- Acreage of soils permanently lost or displaced and acreage of soils temporarily disturbed. Disturbance to soils reduces soil function and increases erosion;
- Number of constructed fords and unimproved crossings on streams. Construction of new stream crossings may contribute to changes in stream function and sedimentation in streams; and
- Number of constructed fords and unimproved crossings within riparian zones and wetlands. Disturbance to riparian zones and wetlands may contribute to changes in stream function and sedimentation in streams.

Design features listed in **Appendix B** have also been developed to reduce or avoid certain impacts, including impacts on water quality and soil erosion. The analysis considers impacts of the project after the incorporation of these project design features.

3.6.2.1 No Action Alternative

Under the No Action Alternative, no impacts to soils and water resources would occur as construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur.

3.6.2.2 Effects Common to All Action Alternatives

Potential impacts to soil and water resources that are common to all of the action alternatives include the following:

- Direct and indirect impacts to soil and soil function;
- Direct and indirect impacts to streams; and
- Impacts to riparian zones and wetlands from stream crossings.

The effects of construction, operations, and maintenance discussed below are the same for all action alternatives. However, the acres of soil disturbance and number of stream crossings impacting wetlands would vary with each alternative. Following the discussion of effects common to all alternatives, a summary table quantifying the magnitude of effects is presented for each alternative (**Table 3.6-3**).

Construction

Soils

The construction of any of the action alternatives would result in the permanent (long-term) loss of soil substrate in areas displaced by pole structures and at the Bordertown Substation. Installation of new poles would permanently displace an area of soil measuring 23 inches in diameter (0.0003 acre) for each actual single pole structure. The total amount of soil displacement would vary depending on the type of structure installed (e.g., single-pole, two-pole

H-frame, or three-pole dead-end/angle structure). Self-supporting pole structures on concrete foundations, which would only be used where the ROW is constrained, would displace an area of soil measuring 3 to 12 feet in diameter for each foundation. An average of seven pole structures per mile would be expected for any action alternative. All action alternatives would require the expansion of the Bordertown Substation, which would permanently impact up to approximately 3.7 acres of soil substrate, all of which would occur on BLM-administered public land.

Disturbance to soils from construction would result in a loss of soil function which may be short-term or long-term. Use of vehicles and heavy equipment may compact soils which could inhibit water infiltration, increase runoff rates, restrict root growth, reduce soil aeration, and possibly affect soil microbiota. Soils at the base of each pole structure would be deliberately compacted to support structures. Loss of vegetation would indirectly affect soils. Vegetation would be cleared at most work sites, and in other areas, vegetation cover would be lost from repeated construction disturbance. Once vegetation cover is removed, exposed soils would be more susceptible to splash erosion and would have increased runoff rates. Steep slopes, which are common throughout the analysis area, would increase the potential for erosion. Most of the soils within the analysis area have an erosion hazard rating of severe (**Figure 3.6-2**).

Design Features to Avoid and Minimize Impacts to Soils

The potential for soil erosion would be minimized through design features (**Appendix B**) that require the effective implementation of BMPs and restoration of temporary project-related surface disturbances. A SWPPP would be developed prior to commencement of construction, and would identify specific BMPs that would be used throughout construction. To ensure the efficacy of erosion controls identified in the SWPPP, inspections would be made at least once per week and before and after rain events for the duration of construction. The implementation of BMPs during project construction is reinforced by design features VG 6, WA 1, and WA 2. Design feature WA 2 ensures that inspections would be made by qualified personnel of NV Energy or its contractors and that maintenance of BMPs would occur on a frequent and regular basis.

Effects of compaction can be short or long-term; however, construction practices and design features would reduce the potential for long-term effects. Restoration of disturbed areas under all action alternatives would routinely include loosening of compacted soils prior to seeding. To minimize the potential for soil compaction during construction, design feature SO 1 would prohibit the use of heavy equipment when soils are wet.

To recover soil function as quickly as possible, restoration would begin as soon as construction is complete. To encourage rapid re-growth of vegetation, design feature VG 5 specifies that shrub vegetation would be cleared primarily by mowing or chopping vegetation in a manner that leaves root systems intact. Re-vegetation would be monitored annually and would be measured against success criteria. Under a best case scenario, it would take approximately 3 to 5 years to meet success criteria, at which time, soils would be adequately stabilized. Short-term (i.e., 10 years or less) soil stabilization is expected but the time period would be directly related to the type, intensity, and duration of the disturbance. Re-vegetation success and soil stabilization on reclaimed access roads would be slow if repeated damage from OHV use occurs. However, the OHV use of restored roads on NFS land would be minimized as much as possible through design

features RT 7 and RT 8 which require the effectiveness of blockades to be evaluated and, if necessary, monitored by USFS OHV rangers until restoration is successful.

Streams

Improved and unimproved stream crossings would disturb the bed and banks of streams which may cause erosion and sedimentation. Impacts would be minor because BMPs and the SWPPP would minimize the potential for erosion. Any project-related erosion would not be of a type or quantity to substantially increase sedimentation in streams.

Additionally, impacts would be minor because the majority of crossings would be to ephemeral streams. Ephemeral streams would not likely need improvements, particularly if the streams have a cobble bed, or do not have a well defined bed and bank. Where ford crossings are constructed, the side-slopes of the drainage would be laid back to a slope that allows for safe vehicle travel. If needed, the slopes and drainage bottoms would be rock-armored to protect the channel bed and bank. Once construction is complete, the crossing would be recontoured, de-compacted, stabilized, and seeded with agency-approved seed mixes. Where riparian vegetation has been removed, vegetation would be replaced.

Design Features to Avoid and Minimize Impacts to Streams

Design features that prohibit construction activities within meadows, wetlands, stream riparian zones, and 100-year floodplains would ensure that perennial streams and most intermittent streams are protected. Design feature WA 12 would prohibit new road crossings on perennial streams; WA 3 would keep staging areas away from streams; WL 9 prohibits construction within the 100-year floodplain of Dog Creek and the Truckee River; and design feature WA 4 prohibits poles within the 100-year floodplain of any stream or wetland.

To address the potential for erosion and sedimentation from temporary road crossings, a number of design features have been developed to ensure stream crossings are properly planned and constructed (design features WA 7 through WA 11). Any improved crossing would be monitored such that repairs or remedial measures are promptly implemented. To ensure that impacts to streams would not be long-term, potential impacts would be addressed primarily through implementation of BMPs, restoration of project disturbances, and implementation of design features specific to minimizing impacts to water resources and soils.

Riparian Zones and Wetlands

Where allowed, improved and unimproved stream crossings may cause the loss of wetland and riparian vegetation that occur along intermittent and perennial streams. Isolated wetlands away from streams would not be impacted because these features are small and can be easily avoided.

Design Features to Avoid and Minimize Impacts to Riparian Zones and Wetlands

Design features implemented to avoid and minimize impacts to streams would also avoid and minimize impacts to riparian zones and wetlands. To ensure that impacts to riparian zones and wetlands would not be long-term, potential impacts would be addressed primarily through implementation of BMPs, restoration of project disturbances, and implementation of design features specific to water resources and soils.

Floodplains

Construction, including temporary road crossings, would not require the placement of permanent, above-ground fills within designated special flood hazard areas. No impacts to floodplains would occur under any action alternative.

3.6.2.1.2 Operation and Maintenance

Temporary disturbance to soils, streams, or riparian zones and wetlands from maintenance-related repairs may occur, but would be localized and would occur only on an infrequent to rare basis. Restoration, if necessary, would begin as soon as repairs are complete, and would include stabilization of soils. With reclamation of disturbances and implementation of BMPs and design features, impacts to soils, streams, and riparian zones and wetlands would be short-term and negligible.

3.6.2.3 Summary of Impacts

A summary of the direct and indirect impacts to water resources and soils from implementation of each action alternative is presented in **Table 3.6-3**. With implementation of the design features described in **Section 3.6.2.1**, impacts from implementation of any of the action alternatives would be short-term and negligible to minor

Table 3.6-3 Summary of Effects by Action Alternative

EFFECTS INDICATOR1	MITCHELL		PEAVINE		POEVILLE		PEAVINE/ POEVILLE	
	NFS LAND	ALL LAND	NFS LAND	ALL LAND	NFS LAND	ALL LAND	NFS LAND	ALL LAND
Soils Permanently Lost (acres)	0.07	3.8	0.07	3.8	0.01	3.8	0.03	3.8
Soils Temporarily Disturbed (acres)	216.3	321.5	205.3	323.2	167.6	627.5	144.2	390.1
Number of Stream Crossings (quantity)	7	9	12	16	0	15	11	16
Number of Wetland/Riparian Road Crossings (quantity)	0	2	0	7	2	9	0	8

[1] Acres and quantity numbers include transmission line clearance area, access roads, and road widening areas.

3.6.2.4 Cumulative Effects

Construction of the existing urban development and major roads within the CIAA likely contributed to some degree of sedimentation of surface waters in the CIAA. Some sedimentation related to soil erosion from stormwater runoff on the unpaved roads and motorized trails, particularly those on steep slopes, has likely occurred and would continue to occur through and

beyond the temporal extent of this cumulative effects analysis. Erosion of soils after wildfires in the CIAA has also likely contributed to sedimentation of surface waters.

Despite the sedimentation from present actions, surface water quality is generally good for both of the watersheds within the water resources and soils CIAA for sedimentation and turbidity (NDEP 2012) (Goodguide Scorecard 2013). The current good condition of the watersheds suggests that the effects of sedimentation from present actions were short-term or minimal, or both. The current good condition of the watersheds also suggests that the continuation of present actions would likely have short-term impacts from soil loss and sedimentation, but would not be likely to worsen the existing conditions.

Reasonably foreseeable future resource management activities, such as the Dog Valley Fuels Reduction and Ecosystem Enhancement Project include project design features protecting watershed resources. Examples include the establishment of protective buffers around streams and prohibition of new stream crossings (USFS 2009). Reasonably foreseeable future resource management activities would cause some soil disturbance during implementation, although these activities would include BMPs to minimize the potential for soil loss from erosion and may require topsoil to be salvaged.

The direct and indirect effects to water resources and soils from the proposed project do not differ substantially by action alternative and consist of the potential erosion of soils and sedimentation of surface waters. These impacts would be minimized but not entirely eliminated by the conditions of the SWPPP and additional design features. Following construction, effects to water resources and soils would attenuate over time as ground cover is restored and erosion potential is reduced.

The cumulative effects of the proposed project would be minor and not have long-term impacts to water resources and soils and would not likely worsen the existing conditions.

3.7 VEGETATION

This section provides a discussion of vegetation resources, including noxious weeds that may occur in the project area and surrounding areas. Special status plant species are discussed in **Section 3.8**.

3.7.1 Affected Environment

The plant assemblages within the project area reflect the unique setting along the western edge of the Great Basin and the eastern edge of the Sierra Nevada. The plant communities occurring within the project area are influenced by elevation, soils, aspect, and past disturbances such as logging, grazing and fire.

Several large-scale fires have burned across the region in the past three decades (USFS 2014i). Wildfire has caused an uneven distribution of tree size and age within the forested communities in the region. Shrub communities have also suffered the repeated effects of fire and have been converted to communities dominated by species that are adapted to disturbance. Following wildfires, vegetation communities may initially be dominated by weeds and annual grasses, such

as cheatgrass, which is found in almost all vegetation communities. **Figure 3.7-1** depicts the modern and historic fires which have burned within the region.

Other factors have changed the vegetative communities of the project area, these range from biologic to anthropogenic. Biological disturbances of vegetation communities have occurred from climatic variations (i.e., drought) resulting in insect infestations in forested communities from Jeffrey pine beetle, pine engraver beetle, fir engraver beetle, and mountain pine beetle often resulting in tree mortality particularly in the Dog Valley area. The USFS manages stands of timber for habitat, forest health, fuels reduction, and implement management tools including forest thinning, brush removal, prescribed fire, and firewood sales. Two projects, the Dog Valley Fuels Reduction and Ecosystem Enhancement project (2010b) and the Beagle Personal Use Fuelwood Area are currently being implemented along a portion of the Mitchell Alternative; primary actions include thinning overstocked stands of timber (USFS 2014f).

3.7.1.1 Vegetation Communities

Seventeen vegetation communities were identified within the project area. For the purposes of depicting vegetation communities in a readable map format, similar communities have been combined on the figure, and are listed as such (**Figure 3.7-2**). The total acreage of vegetation communities within the variable-width corridor by land status for each action alternative is listed in **Table 3.7-1**. Descriptions of the most prevalent vegetation communities follow the table.

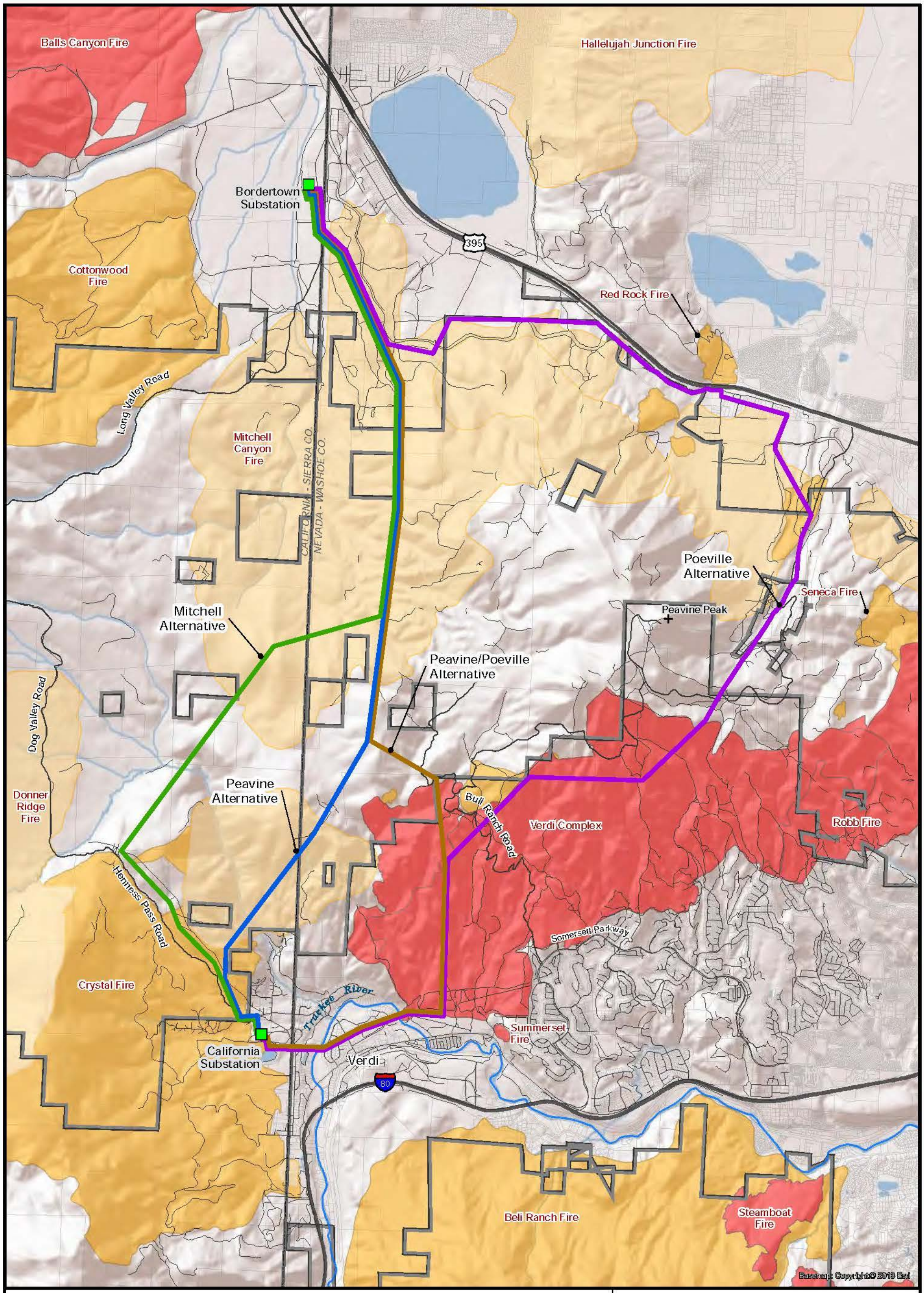


FIGURE 3.7-1
FIRE HISTORY MAP

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

Table 3.7-1 Acres of Vegetation Communities within the Variable-Width Corridor

VEGETATION	MITCHELL	PEAVINE	POEVILLE	PEAVINE/ POEVILLE
USFS				
Bitterbrush-sagebrush	171.0	228.6	143.2	127.9
Eastside pine	140.8	83.7	--	42.2
Chaparral	97.6	92.7	8.3	90.9
Plantation	66.3	17.5	--	--
Mixed scrub	49.1	27.3	0.1	--
Annual grasses and forbs	19.7	17.7	0.9	8.9
Mixed conifer- white fir	18.1	--	--	--
Aspen	12.8	6.1	0.0	6.3
Snowbrush	9.8	6.2	0.8	6.2
Mountain mahogany	4.7	7.8	11.0	6.0
Low sage	4.2	5.7	3.0	10.4
Ruderal	0.5	0.5	6.0	--
Wet meadow	0.5	--	--	--
Jeffrey pine	0.2	0.8	0.1	12.6
Willow	0.1	0.1	3.9	1.1
Mountain sagebrush	--	--	9.7	--
Big sagebrush	--	0.7	3.9	0.7
Urban/developed	--	--	0.8	--
Totals	595.4	495.4	196.7	313.3
BLM				
Big sagebrush	14.3	14.3	14.3	14.3
Urban/developed	0.7	0.7	0.7	0.7
Bitterbrush-sagebrush	0.2	0.2	0.2	0.2
Totals	15.1	15.1	15.1	15.1
Private Land				
Bitterbrush-sagebrush	86.1	88.1	178.9	105.3
Big sagebrush	18.8	18.8	35.5	18.8
Jeffrey pine	11.4	11.4	10.2	12.5
Wet meadow	10.3	10.3	4.9	12.4
Low sage	6.3	6.3	2.8	11.6
Snowbrush	6.1	6.1	4.2	6.1
Eastside pine	4.6	3.9	0.6	0.6
Ruderal	4.4	4.4	76.4	16.6
Willow	2.8	2.8	2.9	5.8
Chaparral	2.2	2.2	5.1	7.5

VEGETATION	MITCHELL	PEAVINE	POEVILLE	PEAVINE/ POEVILLE
Annual grasses and forbs	1.2	1.2	318.2	167.4
Mountain sagebrush	0.9	0.9	8.4	0.9
Plantation	0.2	0.2	--	--
Mixed scrub	0.1	1.6	58.6	--
Urban/developed	--	--	36.5	7.8
Aspen	--	--	3.4	0.2
Mountain mahogany	--	--	3.8	--
Mixed riparian hardwood	--	--	2.4	2.4
Totals	155.4	158.2	752.8	375.9
Grand Total	765.9	668.5	965.2	704.0

Sources: (USFS 2005; 2008a) and JBR field surveys.

Selected Vegetation Community Descriptions

Bitterbrush-Sagebrush Community

On eastside slopes of the northern Sierra Nevada, bitterbrush and upland sagebrushes (such as basin big sagebrush and mountain sagebrush) occasionally mix where the combination of the two genera has dominance of the shrub layer, forming the bitterbrush-sagebrush community (USFS 2008a). The community is spatially associated most commonly with the eastside pine and the mountain sagebrush communities. On Peavine Peak, the bitterbrush-sagebrush community is mostly present on the mid-elevation slopes down into the surrounding flats.

The bitterbrush-sagebrush community is the most abundant vegetation community within the variable-width corridor of each action alternative (**Figure 3.7-2**). However, the community is less abundant on the south aspect of Peavine Peak where the Poeville and Peavine/Poeville Alternatives cross. This area is where wildland fires have notably altered the vegetation communities.

Bordertown Substation
395
Alturas Line
Silver Lake Substation
#141 Line
Long Valley Road
CALIFORNIA - SIERRA CO.
NEVADA - WASHOE CO.
Mitchell Alternative
Peavine Peak
Peavine/Poeville Alternative
Poeville Alternative
Peavine Alternative
Dog Valley Road
Bull Ranch Road
#102 Line
Henness Pass Road
Somersett Parkway
Truckee River
#114 Line
#106 Line
#101 Line
California Substation
Verdi
80
#142 Line
Washoe Substation
Basemap: Copyright© 2013 Esri

Variable Width Analysis

Mapped Vegetation

- Bitterbrush-Sagebrush (Big Sagebrush, Bitterbrush)
- Mountain Mahogany-Scrub-Chaparral
- Conifer (Eastside Pine, Jeffrey Pine, Mixed Conifer-Fir)
- Annual Grasses and Forbs
- Plantations
- Mountain Sagebrush (Low Sagebrush, Black Sagebrush)
- Riparian (Willow, Wet Meadow, Quaking Aspen)
- Agriculture
- Ruderal
- Urban and Developed Land
- Water

N

FIGURE 3.7-2
MAPPED VEGETATION

BORDERTOWN TO CALIFORNIA
120 kV TRANSMISSION LINE EIS

1 in = 1 mile

0 0.5 1 2 Miles

Eastside Pine Community

The eastside pine community is typically found at elevations of 5,000 to 7,000 feet AMSL (USFS 2008a). On the eastside of the northern Sierra Nevada, Jeffrey pine and ponderosa pine are the dominant overstory species. The understory is characterized by Great Basin shrubs, forbs and grasses such as big sagebrush, antelope bitterbrush, curl-leaf mountain mahogany, Bloomer's goldenbush, mule-ears, arrowleaf balsamroot, Idaho fescue, and wildrye grasses.

The eastside pine community occurs within the variable-width corridor for each of the action alternatives. However, the community is generally found west of Peavine Peak, and is more common within the Mitchell and Peavine Alternatives. Some of this community is managed as timber.

Chaparral Communities

The Great Basin-mixed chaparral transition community and the upper montane mixed chaparral community were grouped for purposes of this analysis, forming the chaparral vegetation community. Both communities share many common species and are very similar to one another. The Great Basin-mixed chaparral transition community, an eastside community, is a mixture of montane chaparral species such as snowbrush, greenleaf manzanita, bitter cherry, chokecherry, and snowberry with an equivalent vegetation cover of Great Basin shrub species such as mountain sagebrush, low sagebrush, desert gooseberry and bitterbrush (USFS 2008a; Nachlinger, Peterson, & Williams 1992). The upper montane mixed chaparral community may also include mountain sagebrush and bitterbrush, but the more xeric Great Basin shrub species are typically not present. It occurs at elevations of 6,000 to 7,800 feet AMSL.

The chaparral community occurs within the variable-width corridor of each action alternative being fairly dominant on all but the Poeville Alternative.

Annual Grasses and Forbs and Ruderal Communities

The annual grasses and forbs community and the ruderal community are dominated by noxious weeds and invasive species, and both are particularly common on the dry, south-facing slopes of Peavine Peak. On Peavine Peak, the annual grasses and forbs community occurs at lower elevations, most commonly on more arid slopes and flats with a southerly aspect. The community is generally dominated by cheatgrass, an invasive species, as well as other non-natives or noxious weeds, such as medusahead. The annual grasses and forbs community often occurs as a direct result of wildfire or over-grazing within eastside pine or mixed conifer-fir communities or in areas dominated by sagebrush. The ruderal community is comprised of species that are first to colonize disturbed lands. Within the project area, the community is dominated by noxious weeds and invasive species, including cheatgrass. Other noxious weeds or invasive species common to the community include Scotch (cotton) thistle, musk thistle, bull thistle, Russian thistle, tumble mustard, and tessellate fiddleneck (Nachlinger et al. 1992).

These communities occur within the variable-width corridor of each of the action alternatives. However, they are more prevalent on the south aspect of Peavine Peak within the boundary of the Verdi Complex wildfires, and are therefore more common within areas of the Poeville and Peavine/Poeville Alternatives.

3.7.1.2 Noxious Weeds and Invasive Species

Within the region approximately 17 species of weeds, both noxious and invasive, have been documented occurring in large stands (Nevada Natural Heritage Program [NNHP] 2011; USFS 2014f). Of the noxious weed species identified within the area, several are of primary concern due to the degree of impact they have on ecosystem function and the density or size of the existing infestations. These species include: musk thistle, spotted knapweed, yellow star-thistle, bull thistle, medusahead, perennial pepperweed (tall whitetop), Scotch thistle, and tamarisk.

3.7.1.3 Mitchell Alternative

Vegetation communities within the Mitchell Alternative are presented in **Table 3-7-1**; bitterbrush-sagebrush and sagebrush communities combined constitute 37 percent of the vegetation within the variable-width corridor. Forested communities (e.g., eastside pine, aspen, and plantation) contribute to 31 percent of the vegetation within the variable-width corridor. Chaparral, mountain mahogany, snowbrush, and mixed scrub combined comprise approximately 21 percent of the vegetation within the corridor. Willow, wet meadow, and aspen communities combined comprise approximately 3 percent of the vegetation within the corridor.

There are approximately 6.4 acres of known noxious weed infestations and 30 infestations of an unknown size within the variable-width corridor and road widening area for the Mitchell Alternative. The primary noxious weed infestations include diffuse knapweed, medusahead, and Russian knapweed.

3.7.1.4 Peavine Alternative

The Peavine Alternative is primarily comprised of bitterbrush-sagebrush and sagebrush communities at 52 percent within the variable-width corridor (**Table 3.7-1**). Chaparral, mountain mahogany, and scrub comprise approximately 21 percent of the vegetation within the variable-width corridor, while forested communities comprise approximately 15 percent. Willow, wet meadow, and aspen communities combined comprise approximately 2 percent of the vegetation within the corridor.

There are approximately 12.7 acres of known noxious weed infestations and 23 infestations of an unknown size within the variable-width corridor and road widening areas for the Peavine Alternative. Similar to the Mitchell Alternative, the primary noxious weed infestations include diffuse knapweed, Russian knapweed, and medusahead.

3.7.1.5 Poeville Alternative

Vegetation along the Poeville Alternative is comprised of two main groups of vegetation communities. Bitterbrush-sagebrush and sagebrush comprise 50 percent and annual grasses and forbs and ruderal make up approximately 41 percent of the total vegetation within the variable-width corridor (**Table 3.7-1**). Willow, wet meadow, aspen, and mixed riparian hardwoods communities combined comprise approximately 2 percent of the vegetation within the corridor.

There are approximately 34.3 acres of known noxious weed infestations and 115 infestations of an unknown size within the variable-width corridor and road widening areas for the Poeville Alternative. Because of the length of the alternative, as well as the proximity to suburban and previously burned areas, the Poeville Alternative crosses more diverse weed infestations. The

primary infestations are musk thistle, Scotch thistle, and medusahead along the southern portions of the alternative. On the northern portion of the alternative, diffuse knapweed and perennial pepperweed occur, among others.

3.7.1.6 Peavine/Poeville Alternative

The Peavine/Poeville Alternative has bitterbrush-sagebrush and sagebrush communities that comprise approximately 38 percent of the variable-width corridor (**Table 3.7-1**). Annual grasses and forbs and ruderal communities comprise approximately 27 percent of the vegetation within the variable-width corridor. Similar to the Peavine Alternative, the Peavine/Poeville Alternative has chaparral, mountain mahogany, and scrub combined comprising approximately 27 percent of vegetation within the corridor. Willow, wet meadow, aspen, and mixed riparian hardwoods communities combined comprise approximately 4 percent of the vegetation within the corridor.

There are approximately 30.3 acres of noxious weed infestations and 109 infestations of an unknown size within the variable-width corridor and road widening areas for the Peavine/Poeville Alternative. Most of the infestations are located within areas recently burned by wildfires.

3.7.2 Environmental Consequences

Methods of Analysis

The potential direct and indirect effects on vegetation resources were analyzed and quantified using the impact indicators listed below.

- Acres of vegetation community disturbed or lost;
- Acres of forested community types within line clearance areas; and
- Acres and quantity of noxious weed infestations.

3.7.2.1 No Action Alternative

Under the No Action Alternative, there would be no impacts and losses to vegetation resources as construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur.

3.7.2.2 Effects Common to All Action Alternatives

Potential impacts to vegetation resources that are common to the action alternatives include the following:

- Disturbance or loss of vegetation communities;
- Introduction or perpetuation of noxious weeds and invasive plants; and
- Accidental loss of vegetation from herbicide application.

Construction

Disturbance or Loss of Vegetation Communities

Impacts to vegetation include long-term loss of vegetation where permanent facilities would be constructed and short-term loss of vegetation from construction related disturbances. The

expansion of the Bordertown Substation would cause the long-term (permanent) loss of approximately 3.7 acres of bitterbrush-sagebrush community. Additionally, the installation of poles would permanently remove a 0.0003-acre area of vegetation for each pole structure. On average, pole structures would be placed every 800 feet and the number of pole structures would be proportional to the length of the alternative. The type and amount of vegetation community that would be impacted cannot be determined at this time because the locations of pole structures are not known. However, vegetation communities that are present in the ROW (**Table 3.7-2**) provide an indication of the type and relative abundance of vegetation communities that could be permanently impacted by pole structures.

Table 3.7-2 Acres of Vegetation Communities within the ROW

VEGETATION COMMUNITY[1]	MITCHELL		PEAVINE		POEVILLE		PEAVINE/ POEVILLE	
	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL
Bitterbrush-sagebrush	25.0	48.1	33.3	56.4	36.1	81.0	20.4	51.9
Eastside pine	23.1	23.7	14.6	15.3	0.0	0.1	6.1	6.3
Jeffrey pine	0.0	2.3	0.1	2.4	0.0	1.6	1.9	3.9
Mixed conifer-fir	3.6	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Plantation	9.9	9.9	2.6	2.6	0.0	0.0	0.0	0.0
Aspen	2.3	2.3	1.1	1.1	0.0	1.2	1.1	1.9
Chaparral	15.1	15.1	14.5	14.5	1.5	1.8	13.7	15.1
Annual grasses and forbs	2.2	2.3	2.5	2.6	0.0	52.2	0.2	30.7
Big sagebrush	0.0	3.7	0.0	3.8	1.2	11.5	0.0	3.8
Great Basin mixed scrub	7.3	7.3	4.7	4.7	0.0	8.8	0.0	0.0
Curl-leaf mountain mahogany	0.9	0.9	1.5	1.5	1.0	1.7	1.1	1.1
Low sagebrush	1.0	2.3	0.9	2.2	0.3	0.7	1.5	3.7
Mountain sagebrush	0.0	0.0	0.0	0.0	1.7	2.4	0.0	0.0
Ruderal	0.2	2.0	0.2	2.0	2.1	20.2	0.0	4.6
Snowbrush	0.5	0.7	0.5	0.7	0.0	0.9	0.5	0.7
Wet meadow	0.0	2.3	0.0	2.3	0.0	0.8	0.0	3.0
Willow	0.0	0.2	0.0	0.2	0.3	1.7	0.1	1.5
Total:	91.1	126.7	76.5	112.3	44.2	186.6	46.6	128.2

Sources: (USFS 2014f)
[1] Does not include Urban/Developed

Most of the impacts to vegetation communities would result from the construction of temporary project features through vegetation removal or blading vegetation. As presented in **Table 2.3-1**, loss of vegetation cover would occur at pole sites, wire setup sites, staging areas, widened roads, new access roads, and within line clearance areas. The estimated construction disturbance from each action alternative is presented in **Table 3.7-3**.

Table 3.7-3 Estimated Temporary Construction Disturbance

ALTERNATIVE	TEMPORARY CONSTRUCTION DISTURBANCE (ACRES)
Mitchell	281.7
Peavine	302.1
Poeville	627.6
Peavine/Poeville	377.9

The existing roads that would be widened for construction access are known, and the vegetation communities that would be impacted within road widening areas are shown in **Table 3.7-4**. The locations for other construction activities/areas are not known. However, it is certain that these project elements would be constructed within the variable-width corridor. The acres of vegetation communities that are present within the variable-width corridor of each action alternative are shown in **Table 3.7-1**. Further, the majority of surface disturbance from construction would occur within the ROW/easement. **Table 3.7-2** presents the acres of vegetation communities within the ROW/easement as an indication of the type and relative abundance of vegetation communities that could be disturbed by project construction activities.

Table 3.7-4 Acres of Vegetation Communities within Road Widening Corridors[1]

VEGETATION COMMUNITY	MITCHELL		PEAVINE		POEVILLE		PEAVINE/ POEVILLE	
	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL	NFS LAND	TOTAL
Bitterbrush-sagebrush	4.1	10.3	12.9	25.8	4.5	29.8	11.1	28.1
Eastside pine	4.1	4.2	6.9	8.2	0.0	0.1	3.5	4.8
Jeffrey pine	0.0	0.2	0.0	0.2	0.0	0.3	0.0	0.0
Mixed conifer-fir	0.2	0.2	0.4	0.4	0.0	0.0	0.2	0.2
Plantation	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0
Aspen	0.8	0.8	0.8	0.8	0.0	0.8	0.8	1.0
Chaparral	0.7	0.7	1.2	1.2	0.5	3.0	1.1	3.0
Willow	1.0	1.0	1.1	1.3	0.0	0.1	1.1	1.3
Annual grasses and forbs	0.0	1.2	0.4	3.4	0.3	7.8	0.3	4.4
Ruderal	0.0	0.2	0.0	2.6	0.0	10.5	0.0	8.1
Mountain sagebrush	0.5	0.7	0.5	0.7	1.2	2.8	1.3	3.0
Big sagebrush	0.0	0.2	0.0	0.3	0.0	0.8	0.0	0.4
Curl-leaf mountain mahogany	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.2
Great Basin mixed scrub	0.1	0.2	0.0	0.1	0.0	2.5	0.0	2.3
Low sagebrush	0.0	0.0	0.3	0.4	0.1	0.1	0.0	0.0
Snowbrush	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Wet meadow	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0
Total[1]:	11.5	20.0	25.8	47.0	6.8	59.0	19.4	56.9

Sources: (USFS 2014f)
[1] Does not include vegetation communities within portions of the road widening corridor analysis area located inside of the variable-width corridor

The loss of vegetative cover would be short-term in all areas that are successfully restored (reclaimed and reseeded) following construction. Restoration would follow a detailed restoration plan that would be included as part of the COM Plan. To restore vegetative cover, restoration seed mixes and seeding rates would be tailored to the desired vegetation community, soil substrate, elevation, and land administration/ownership. Restoration success would be monitored until restoration is deemed successful by the USFS. It would likely take approximately 3 to 5 years to meet restoration success criteria under optimal conditions, depending on the localized environmental conditions at the restoration site and the type, intensity, and duration of the disturbance. Less ecologically resilient sites such as south facing slopes, steep slopes, and sites that lack soil may require more than 5 years or potentially may never be fully restored.

Tree removal within line clearance areas would have long-term impacts to forested communities and forest product resources. The re-growth of trees would not be allowed for the operational life of the project due to safety requirements which require a "tree-free" zone underneath and surrounding the transmission lines. The removal of trees would be a long-term alteration of the species composition and physical structure of forested communities. The forested community would be converted to one that is dominated by shrubs and other groundcover. **Table 3.7-5** presents the acreage of forested community that is within line clearance area and would be affected by tree removal. Note that the acreage of forest communities presented in **Table 3.7-5** is included in the estimated construction disturbance from each alternative, as presented in **Table 3.7-3**.

Table 3.7-5 Acres of Forested Community within Line Clearance Area

VEGETATION TYPE	MITCHELL	PEAVINE	POEVILLE	PEAVINE/POEVILLE
Forested community[1, 2]	41.8	21.4	2.9	12.1

Source: (USFS 2014f)
[1] Includes eastside pine, Jeffrey pine, mixed conifer-fir, plantation, and aspen vegetation communities
[2] Transmission line clearance area was assumed to be the width of the ROW/easement, although trees outside the ROW/easement with the potential to fall on conductor wires would also be removed

Despite the minor variations in the acres of vegetation communities that would be cleared from each action alternative, the short-term and long-term impacts would be minor to negligible under any of the action alternatives. Impacts would be minor to negligible because the affected vegetation communities are locally and regionally common, based on the number of acres of each community available within 5 miles of the variable-width corridor of each action alternative (USFS 2014f). In addition, successful restoration of vegetation communities and effective implementation of design features would reduce impacts to vegetation resources to negligible or minor levels.

Design Features to Avoid or Minimize the Disturbance or Loss of Vegetation Communities

Design features have been developed to protect sensitive riparian vegetation communities (i.e., willow, wet meadow, and quaking aspen), which are the least abundant communities within the analysis area. Design feature WA 12 would prohibit new road crossings on perennial streams; design feature WA 4 prohibits the placement of poles, staging areas, and fuel storage areas near floodplains and wetlands. Design feature SV 3 provides added protection on NFS land and specifically prohibits construction disturbance within wet meadows.

To ensure the restored vegetation communities would attain the appropriate community composition over time, the success criteria that would be used for reclaimed vegetation would be based upon established reference sites (design feature VG 7).

The short-term and long-term loss of vegetation would be a negligible to minor impact because all temporary construction disturbances would be restored as soon as construction is completed, and success of the re-vegetation would be based on pre-established restoration standards. Very few acres of vegetation would be lost in relation to the surrounding landscape. Design features would protect the least abundant and sensitive communities within the analysis area by limiting the type of project features that can be placed within or near willow, wet meadow, and quaking

aspen communities. Vegetation communities that would be impacted are fairly abundant within the region based on a review of the acres of vegetation communities available within 5 miles of the variable-width corridor (USFS 2014f). Forested communities are locally and regionally abundant.

Introduction or Perpetuation of Noxious Weeds and Invasive Plants

Construction activities could potentially introduce noxious and invasive weeds. Noxious weeds can change soil physiology and chemistry, and out-compete native species, leaving the infested habitats with low species diversity and vulnerable to repeated fires. The removal of native vegetation communities and disturbance of soils would create conditions that facilitate weed infestations. The introduction of noxious and invasive weeds (e.g., seeds or plant parts) could occur from project vehicles, construction equipment, earth materials (e.g., fill dirt, topsoil, etc.), or erosion control installations (e.g., straw bales, wattles, etc.) contaminated with noxious weed seeds. The presence of existing noxious weed infestations within the analysis area would increase the likelihood for materials and construction equipment to be contaminated. Wind, precipitation, and inadvertent transport on public and project vehicles or other vectors, may disperse seeds from these sources into areas where surface disturbance has occurred within the analysis area.

On reclaimed centerline travel roads and other reclaimed access roads re-vegetation success and recovery of vegetation communities would be slow if repeated damage from unauthorized OHV use occurs. The combination of disturbed soils and lack of effective vegetation cover would create optimal conditions for infestations of noxious weeds, especially if seeds are brought in by OHVs.

To address the potential for infestations, all temporary construction disturbances would be treated for noxious weeds. The treatment and the subsequent monitoring of the treatment success would follow a detailed weed treatment plan that would be included as part of the COM Plan.

Design Features to Avoid or Minimize the Introduction of Noxious Weeds and Invasive Plants

To reduce the potential for the introduction and spread of noxious weeds or invasive plants, a number of design features (NW 1 through NW 10) would be implemented prior to, during, and following construction activities. Design features prohibit the construction of temporary new access roads in areas heavily infested with noxious or invasive weeds. Should new infestations not already identified, be found where surface disturbance is proposed, noxious weeds would be identified, mapped, and treated prior to construction and treatment of noxious weeds would continue until disturbed areas are successfully reclaimed, which is typically 3 to 5 years. During construction, project vehicles and construction equipment would be cleaned with a power washer of all mud, dirt, and plant parts. Materials brought to the project site such as fill material and seed mixes would be certified as weed-free.

To address the potential for unauthorized OHV use of construction access roads that could increase the risk of infestations, design features were developed to discourage unauthorized OHV use. Design features RT 3 and RT 4 require that all new temporary access roads have a physical closure (i.e., barricade) installed immediately following construction. Barricades would be monitored for effectiveness and compliance with the reclamation.

With implementation of a weed treatment plan and design features that ensure that treatment measures are taken during and after construction, the potential for weed infestations would be low. Effects would be minor. Monitoring and continued treatment until success is met would ensure that impacts are short-term.

Effects to Vegetation from Herbicide Application

Non-target vegetation may be inadvertently exposed to herbicide through direct spray, downwind drift, runoff of chemical laden soil, and accidental spills. During herbicide application, non-target vegetation immediately adjacent to noxious weed infestation treatment areas can be exposed to overspray. Exposure would cause damage to vegetation and possibly death of the plant. The magnitude of effects would be dependent on the specific herbicide product, timing of application, the species exposed, and the volume or concentration of chemical exposure.

Design Features to Avoid or Minimize Impacts From Herbicide Application

Design features HE 1 though HE 15 were developed to minimize or avoid effects of herbicide use to non-target or sensitive resources. For example, to minimize the potential for overspray, during spray applications, the spray nozzle would be kept as close to target plants as possible. The potential for drift would be reduced by the use of coarse droplet sizes and prohibiting spray applications when wind speed exceeds 5 miles per hour. Additional design features exclude herbicide spray applications near streams, meadows, wetlands, and riparian zones.

With implementation of design features, damage to vegetation from direct exposure, drift, and accidental spills would be minor as the affected area would be small and localized. Effects would be short-term because many perennial plants would recover from inadvertent spray.

Operation and Maintenance

Under all action alternatives, new facilities are not anticipated during the operation and maintenance phase of the project, and therefore, additional long-term (permanent) loss of vegetation would not occur. However, temporary disturbance from maintenance-related construction activities to vegetation may occur, but would not be extensive and would occur on an infrequent to rare basis. Each disturbance episode to vegetation would be followed by restoration of vegetation, weed control, and stabilization of soils, if needed. Annual inspections conducted via helicopter or from walking to the pole structures from existing roads are not anticipated to impact vegetation communities.

Removal of trees from within the transmission line clearance area would continue as needed to meet safety standards through the operational life of the project. While actual disturbance from the line clearance activities would be restored, long-term impacts are still anticipated for forested communities due to the removal of the overstory trees that are indicative of forested communities.

Inspections and maintenance activities would have the potential for inadvertent introduction of noxious and invasive weeds from the use of vehicles and equipment contaminated with noxious weed seeds and from temporary surface disturbance. The potential for introduction of noxious weeds during the maintenance phase would be much less than during the construction phase

because of the fewer equipment and vehicles that would be needed, areas of ground disturbance would be localized and typically much smaller, and the construction period would be brief.

Design features (**Appendix B**) implemented during construction would also apply to the operations and maintenance phase of the project. With reclamation of disturbances and implementation of BMPs and design features, direct and indirect effects from the loss of vegetation communities would continue to be minimized, and impacts would range from negligible to minor, but would be long-term. Long-term impacts from noxious weed infestations could occur from maintenance of any of the action alternatives but would be negligible due to implementation of design features.

3.7.2.3 Cumulative Effects

Native vegetation communities have been permanently displaced by some roads and trails that comprise the transportation network. To a lesser extent, the damage caused by unauthorized OHV recreation has also resulted in a loss of vegetation communities. Conversion of some native vegetation to infestations of noxious weed and invasive species has also changed the species composition of some vegetation communities. Although not an action, wildfire within the vegetation CIAA has also caused substantial changes to the composition and condition of the vegetation communities within the CIAA. For example, forested habitat has been not only modified, but in some areas has been entirely lost and converted to shrub and grass habitat following wildfire.

Existing utility lines have also changed the composition and structure of the vegetation communities within the ROW/easements of the utilities. Aerial imagery shows that forest communities have been permanently removed from the ROW/easements of existing transmission lines and pipelines. Vegetation communities within the ROW/easements where forest communities have been removed are now dominated by shrubs and grasses.

The construction or implementation of all of the present actions considered in this analysis may have introduced or contributed to the spread of noxious weeds and invasive species within the CIAA. Present actions that may continue to introduce or contribute to the spread of noxious weeds and invasive species within the CIAA include the maintenance of existing utility lines and roads, OHV recreation (whether authorized or not), and livestock grazing. Colonization of noxious weeds and invasive species within the CIAA often occurs in areas that have burned in wildfires.

Present resource management activities, such as prescribed burns and forest thinning projects, have impacted vegetation communities by changing the species composition and structure of vegetation cover. Forest plantations have also impacted vegetation communities from changes to the species composition and structure and have created variation in the maturity stages of forest communities. However, the objective of present resource management activities is generally to improve the health of vegetation communities.

Under any action alternative, the proposed project would contribute to the loss or alteration of several hundred acres of vegetation, but losses would be minor and short-term, with the exception of trees, which would be long-term. These effects would decrease with time, as restored vegetation becomes established, with the exception of trees. To address noxious weeds

and invasive species, design features would require that existing weed infestations be treated and require a number of measures to reduce the potential for infestations to spread. As a result, the proposed project would have minimal contribution to the spread of weeds, and the most likely cause of weed infestations would be other reasonably foreseeable actions other than resource management activities. With the effective implementation of design features and restoration, the cumulative impacts of any of the action alternatives to vegetation would be minor.

3.8 SPECIAL STATUS PLANTS

Special status plants are species that meet one or more of the following criteria:

- Federally-listed, proposed, or candidate for listing, as threatened or endangered;
- Designated as sensitive or species of concern by the USFS;
- Designated as sensitive by the BLM;
- Listed as threatened or endangered with the state of California or state of Nevada;
- Designated as rare by California Native Plant Society (CNPS) in its Inventory of Rare and Endangered Plants of California; and
- Listed as At-Risk with the NNHP.

3.8.1 Affected Environment

Table 3.8-1 presents the special status plants with the potential to occur in the project area. The determination of whether a species had the potential to occur was based on habitat preference (e.g., substrate type, vegetation community, and elevational range) and geographic distribution. Additional species dismissed from further review included those with special status designations in California that had an abundant distribution in Nevada.

Table 3.8-1 Potential Special Status Plants within the Analysis Area

SPECIAL STATUS PLANT	STATUS[1]	HABITAT	KNOWN DISTRIBUTION
Lemmon milkvetch (*Astragalus lemmonii*)	BS CA; CNPS 1B.2; NNHP	Seeps and wetlands within sagebrush scrub vegetation at elevations between 4,265 and 7,218 feet (CNPS 2012).	The nearest known location is Loyalton, California.
Upswept moonwort (Botrychium ascendens)	SS; CNPS 2.3; NNHP	Confined to riparian areas in open riparian meadow habitats between 4,700 and 9,000 feet. Generally found with mosses, grasses, sedges, rushes, and other riparian vegetation.	Sierra Nevada east slope; documented occurrence in the Hoover Wilderness.
Dainty moonwort (Botrychium crenulatum)	SS; CNPS 2.2; NNHP	Confined to riparian areas, in perennially wet or moist soils at elevations between 4,700 and 9,000 feet. Generally found in dense herbaceous vegetation with mosses, grasses, sedges, and rushes.	Sierra Nevada east slope.
Slender moonwort (*Botrychium lineare*)	SS; CNPS 1B.3	Confined to riparian areas, in perennially wet or moist soils within meadows, seeps and springs at elevations between 4,700 and 9,000 feet. Generally found with mosses, grasses, sedges, rushes, and other riparian vegetation.	Sierra Nevada east slope.
Altered andesite buckwheat (*Eriogonum robustum*)	SS; BS NV; NNHP	Andesitic soil on barren ridges, knolls and steep slopes. Substrate is dry, shallow, highly acidic (pH 3.3-5.5) gravelly clay soils mainly of the Smallcone Series, derived from weathering of hydrothermal sulfide deposits formed in andesite, or sometimes in rhyolitic or granitic rocks (Morefield 2001).	Virginia Range in Storey and Washoe counties and the Carson Range of the Sierra Nevada foothills and Peavine Peak, both areas in Washoe County, Nevada.
Sierra Valley ivesia (*Ivesia aperta* var. *aperta*)	SS; BS CA; BS NV; CNPS 1B.2; NVT	Vernally saturated meadows and ephemeral channels. In Nevada the populations are restricted to shallow, slow draining soils which are volcanic in origin. These sites may be located in Great Basin scrub, lower montane forests, pinyon-juniper woodlands and vernal pools.	The majority of known populations occur in the vicinity of Sierra Valley. Nearest known population occurs on the northeast flank of Peavine Peak, Washoe County, Nevada (Witham 2000).
Dog Valley ivesia (*Ivesia aperta* var. *canina*)	SS; BS NV; CNPS 1B.1	Endemic to Dog Valley on vernally saturated sites such as meadow flats, ephemeral channels, and abandoned irrigation ditches. Soils typically have a surface layer that is sandy loam and slightly acidic. Subsoils are a clay loam derived from weathered to slightly fractured andesitic rock.	Previously known occurrences were restricted to Dog Valley, Sierra County, California. In 2011, the USFS found the first population known to occur in Nevada on the western flank of Peavine Peak, Washoe County, Nevada.

SPECIAL STATUS PLANT	STATUS[1]	HABITAT	KNOWN DISTRIBUTION
Webber ivesia (*Ivesia webberi*)	BS CA; BS NV; T and CH	Restricted to shallow, clayey soils with a rocky pavement like surface on mid-elevation (4,000 to 5,950) flats, benches or terraces. Occupied sites are sparsely vegetated; associated species include low sage and squirreltail (USFS 2010a; Witham 2000).	Douglas and Washoe Counties, Nevada.
Jaw-leaf lupine (Lupinus malacophyllus)	SI	Occurs in colonies on dry, rocky hills and sandy or gravelly flats near Verdi, Nevada, at elevations between 4,590 and 5,650 feet. Associated species include big sagebrush, *Eriogonum* sp., and Indian paintbrush.	Endemic to west central Nevada, Washoe, Carson, Lyon, and Douglas Counties.
Shevock bristle-moss (*Orthotrichum shevockii*)	SS; BS NV; CNPS 1B.3	Found on underhangs or crevices of granitic rock within pinyon–juniper to Jeffrey Pine forests. It grows in filtered light (Lewinsky-Haapasaari and Norris 1998).	Sierra Nevada east slope and the western edge of the Carson Range.
Altered andesite popcorn flower (*Plagiobothrys glomeratus*)	SS; BS NV	Restricted to altered andesite soil between 4,860 and 6,650 feet (Tiehm 2000). The distribution closely matches that of *Eriogonum robustum*, altered andesite buckwheat.	Endemic to western Nevada, known from the Virginia Range in Storey and Washoe Counties; Carson Range of the Sierra Nevada foothills; and Peavine Peak in Washoe County.

[1] Status designations:

SS - Forest Service Sensitive in Region 4
SI - USFS Species of Interest in Region 4
T – USFWS ESA Threatened
CH – USFWS ESA Critical Habitat
BS CA – Bureau of Land Management Sensitive in California
BS NV – Bureau of Land Management Sensitive in Nevada
NVT - listed by the state of Nevada as Threatened
NNHP - designated by the NNHP as At-Risk
CNPS (California Native Plant Society) designations:

1B Plants rare, threatened or endangered in California and elsewhere.
2 Plants rare, threatened or endangered in California, but more common elsewhere.
3 Plants for which more information is needed – a review list.
4 Plants of limited distribution – a watch list.
.1 Seriously endangered in California.
.2 Fairly endangered in California.
.3 Not very endangered in California.

3.8.1.1 Potential Habitat

Field surveys for special status species were conducted within the ROW, portions of the variable-width corridor, and road widening corridors for each action alternative. Where surveys were conducted, special status plant populations were not found. However, the field surveys confirmed the presence of potential habitat for a number of special status plants; for areas where potential habitat was not mapped during field surveys, GIS and aerial photo interpretation were used to delineate potential habitat. Methods to identify potential habitat specific to each special

status species are described in *Specialist Report: Special Status Plants Bordertown to California 120 kV Transmission Line Project* (USFS 2014d). Acres of potential habitat for special status plants are presented in **Tables 3.8-2** and **3.8-3**. Potential habitat is presented for NFS land and private land in order to track the amount of potential habitat that would be protected by design features, which are not always applicable on private land. No potential habitat for special status plants occur on BLM-administered public land**.**

Table 3.8-2 Potential Habitat within Variable-Width Corridor

SPECIAL STATUS SPECIES	MITCHELL (ACRES)		PEAVINE (ACRES)		POEVILLE (ACRES)		PEAVINE/ POEVILLE (ACRES)	
	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE
Upswept, Dainty, and Slender moonwort	1.8	0.3	1.7	0.3	0.8	0	1.8	0
Altered andesite buckwheat	0	0	0	0	0	0.7	0	0.5
Altered andesite popcorn flower	0	0	0	0	0	0.7	0	0.5
Sierra Valley ivesia	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
Dog Valley ivesia	1.9	8.9	1.9	8.9	0	0	1.9	8.9
Dog Valley ivesia Occupied habitat	0	0	35.5	0	0	0	35.5	0
Webber ivesia	1.9	12.6	1.9	12.6	0	1.1	2.0	12.6
Webber ivesia USFWS Critical Habitat	0	0	0	0	0	0	0	0
Jaw-leaf lupine	42.9	309.4	203.0	319.3	148.9	383.8	0	350.3
Shevock bristle-moss	0	0	0	0	0	0	0	0
Lemmon milkvetch	4.51	0	0.6	0	1.2	0.4	1.1	0.4

Note: Potential habitat is not occupied unless otherwise noted.

Table 3.8-3 Potential Habitat within Road Widening Corridor

SPECIAL STATUS SPECIES	MITCHELL (ACRES)		PEAVINE (ACRES)		POEVILLE (ACRES)		PEAVINE/ POEVILLE (ACRES)	
	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE
Moonwort	0	0.2	0	0.2	0	0	0	0
Altered andesite buckwheat	0	0	0	0	0	0.6	0	0
Altered andesite popcorn flower	0	0	0	0	0	0.6	0	0
Sierra Valley ivesia	0	<0.1	0	<0.1	0	0	0	0
Dog Valley ivesia	0.1	0.2	0.1	0.2	0	0	0.1	0.2
Dog Valley ivesia Occupied habitat	0	0	0	0	0	0	0	0
Webber ivesia	0	0.6	0.1	0.6	0	0.6	0.1	0.6
Webber ivesia USFWS Critical Habitat	0	0	0	0	0	0	0	0
Jaw-leaf lupine	0.4	7.5	0.4	7.6	0	0.7	0	6.8
Shevock bristle-moss	0	0	0	0	0	0	0	0
Lemmon milkvetch	0	<0.1	0	<0.1	0	<0.1	0	<0.1

Note: Potential habitat is not occupied unless otherwise noted; acreage does not include area inside the variable-width corridor.

Dog Valley ivesia is the only species for which occupied habitat is known within the analysis area. Occupied habitat specific to Dog Valley ivesia consists of the area within 500 meters (1,640 feet) of a known population. The use of a 500-meter buffer was based on a recent literature review conducted by BLM regarding the use of buffers to protect native pollinators of rare plants (Winder 2012).

3.8.1.2 Species Accounts

Since no potential habitat for the Shevock bristle-moss was identified within the variable width or the road widening corridors, a species account is not provided for this species.

Upswept, Dainty, and Slender Moonwort

Three moonwort species have the potential to occur in the analysis area. Moonwort ferns have a unique lifecycle compared to other ferns or flowering plants. Moonwort ferns produce spores, which germinate underground. The plants then grow and reproduce below ground and for several years no portion of the plant may be visible above ground (Johnson-Groh, Reidel, Schoessler, & Skogen 2002; Johnson-Groh and Lee 2002). The above ground portion of all moonwort ferns consists of a single stem. Field surveys confirmed the presence of potential habitat within the analysis area consisting of perennially wet or moist areas supporting riparian vegetation such as aspen or willow communities that have understory of wetland graminoids, mosses, and wetland forbs.

Altered Andesite Buckwheat and Altered Andesite Popcorn Flower

Altered andesite buckwheat is a perennial mat forming plant. The altered andesite popcorn flower is a small upright annual and population numbers fluctuate year to year depending on the amount of precipitation. Both plants are endemic to Nevada and are not known to occur within California. Altered andesite buckwheat is restricted to hydrothermally-altered habitat patches, which occur in a band along and east of the eastern Sierra Nevada. The popcorn flower grows in similar habitat, though it is slightly less restricted. Typical habitat sites are located on barren ridges, knolls, and steep slopes in dry, shallow, acidic (pH 3.3 to 5.5) soils. Relative to the analysis area, the nearest known locations of altered andesite buckwheat and altered andesite popcorn flower are located on private land on the southeast flank of Peavine Peak about 1.0 to 1.5 miles to the southeast of the Poeville Alternative at an elevation of approximately 5,500 feet AMSL. Very limited potential habitat for both species was identified.

Sierra Valley Ivesia

Sierra Valley ivesia is a perennial herb in the rose family. Sierra Valley ivesia grows on shallow, vernally saturated, slowly draining, sandy to rocky clay soils derived from mostly andesitic volcanic rock or alluvium. Habitat is found on benches and flats in meadows, seeps, and intermittent drainages in the yellow-pine, mountain sagebrush, and mountain mahogany zones. The elevation range of the species is 6,460 to 7,300 feet AMSL in Nevada and 4,855 to 7,545 feet AMSL in California (CNPS 2012; Morefield 2001). Sierra Valley ivesia is known to occur in Lassen, Plumas, and Sierra counties in California and Storey and Washoe counties in Nevada. The nearest known population is within the project area, on the northwest flank of Peavine Peak, approximately 1.0 mile east of the Peavine Alternative and 3.0 miles west of the Poeville Alternative. The Ball Ranch populations in Sierra County, California, are also nearby, approximately 4.0 miles west of the Bordertown Substation.

Dog Valley Ivesia

Dog Valley ivesia is a perennial herb and can be distinguished from the Sierra Valley ivesia by its more decumbent stems, larger flowers, and larger petals. Prior to 2011, the nearest known location of Dog Valley ivesia was within Dog Valley approximately 0.25 mile west of the Mitchell Alternative. Within Dog Valley, it is located on alluvial fans associated with the main meadow in Dog Valley and on lower, open slopes in the east side pine and Jeffrey pine vegetation communities (USFS 2010a). In 2011, botanical surveys conducted by the USFS identified a 1-acre population approximately 6.5 miles south of the Bordertown Substation. This population is the only known population in Nevada. For the purpose of this analysis, all area within 500 meters of any population on NFS land is considered occupied habitat. The variable-width corridor of the Peavine and Peavine/Poeville Alternatives overlap a portion of the 500-meter buffer, but do not overlap the population. The use of a 500-meter buffer was based on a recent literature review conducted by BLM regarding the use of buffers to protect native pollinators of rare plants (Winder 2012). Field surveys confirmed potential habitat associated with meadows along the northern portion of the Mitchell Alternative, which is the same as those portions of the Peavine and Peavine/Poeville Alternatives.

Webber Ivesia

Webber ivesia is a threatened species protected under the ESA. Webber ivesia was listed in June 2014 (Federal Register 79:106 pp 31878-31883) and the final rule also included designation of critical habitat, which is also protected under the ESA. Designated critical habitat occurs within the project area, but not within the variable-width corridor of any action alternative (Federal Register 79:106 pp 32150). In the state of Nevada, Webber ivesia is considered Critically Endangered and is protected by Nevada Revised Statues 527.260-527.300. The species is considered a special status species by the USFS and BLM. The habitat for Webber ivesia, a low perennial plant, is restricted to shallow, clayey, soils with a rocky pavement-like surface derived from andesitic rock types, which are dominated by low sagebrush (Witham 2000). There are 15 known populations of Webber ivesia in California and Nevada. Ten locations occur across Lassen, Plumas, and Sierra counties, California; four locations are situated to the north and southwest of Reno, Nevada; and one population is located in Douglas County, Nevada. The elevation range of known populations is from 3,400 to 6,700 feet AMSL. Botanical surveys conducted by the USFS and JBR in 2011 and 2013 identified five populations approximately 2.7 to 5.5 miles south of the Bordertown Substation on the Nevada side of the state line. For the purpose of this analysis, all area within 500 meters of any population on NFS land is considered occupied habitat. The variable-width corridor of any of the action alternatives do not cross occupied habitat. None of the action alternatives intersect critical habitat.

Jaw-leaf Lupine

Jaw-leaf lupine is an annual herb in the pea family, which grows up to several erect stems and has an abundance of pale purple/white, relatively large flowers (Cronquist et al. 1989). The entire plant is soft and hairy. Jaw-leaf lupine often colonizes openings within mixed conifer and sagebrush communities on sandy and/or gravelly flats and foothill slopes at elevations between 4,590 and 5,650 feet AMSL. Like other annual plants, bloom periods are influenced by precipitation. Jaw-leaf lupine has been reported on Peavine Peak within the habitat and elevation range mentioned above (Williams, Howell, True, & Tiehm 1992). Jaw-leaf lupine has also been reported to the west of the analysis area near Verdi, Nevada.

Lemmon Milkvetch

Lemmon milkvetch is a slender, prostrate, or loosely matted perennial herb in the pea family. This milkvetch occurs in seeps and wetlands within sagebrush scrub vegetation at elevations between 4,265 and 7,218 feet AMSL (CNPS 2012). The nearest known location of this species is in Loyalton, California over 25 miles north of the analysis area.

3.8.2 Environmental Consequences

Methods of Analysis

The specific indicators that were used to evaluate effects to special status plants are:

- Acres of disturbance to habitat currently occupied by special status plants; and
- Acres of disturbance to unoccupied potential habitat.

3.8.2.1 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur; therefore there would be no impacts to special status plant populations or habitat.

3.8.2.2 Effects Common to All Action Alternatives

After the selection of the preferred project alternative, a Biological Assessment will be prepared as required by Section 7 of the ESA for the preferred project alternative to evaluate the effects of project activities on federally-listed species (e.g., Webber ivesia).

Construction

Plant Populations

Potential impacts to special status plant populations (and individual plants) include crushing foliage and root systems and uprooting plants during ground disturbing activities. Although no populations (or individuals) were detected during field surveys, certain special status plants may occur in habitats that have been previously surveyed. Jaw-leaf lupine and altered andesite popcorn flower are spring annuals which are affected by seasonal fluctuation in precipitation and may not appear under dry conditions. Upswept, dainty, and slender moonwort can be difficult to detect as the ferns complete much of their life cycle below the ground, and above ground plant structures are not produced annually.

Design Features to Avoid or Minimize Impacts to Special Status Plant Populations

Design features have been developed to protect special status plant populations (and individual plants) (**Appendix B**). The implementation of design features SV 3, SV 4, SV 5, SV 9, NW 4, and HE 13 would ensure that direct and indirect effects to special status plant populations are avoided under any action alternative. Design feature SV 7 provides further protection to populations on NFS land by prohibiting road construction within 200 feet of special status plants. Design features SV 7, SV 8, and SV 10 provide increased protection to Webber ivesia and Dog Valley ivesia populations that occur on NFS land by prohibiting ground disturbance within 500 meters (1,640 feet) of the population. Design feature SV 1 would ensure that if a previously unknown population is found during construction, work would be halted and appropriate avoidance buffer and other necessary protective measures would be established.

To protect populations of jaw-leaf lupine, altered andesite popcorn flower, and moonwort ferns that may be present in the analysis area, implementation of design feature SV 2 would ensure that field surveys are conducted once an alternative is selected through the NEPA process. If populations are found, SV 5 requires that all project related ground disturbance would avoid special status plant populations. Accordingly, the construction of the any of the action alternative would not have any impacts to special status plant populations.

Potential Habitat

Construction of any action alternative could disturb potential habitat and preclude colonization of the habitat by special status plants in the future. As described in **Section 3.7 Vegetation**, most of the impacts to potential habitat for special status plants would result from vegetation disturbance

or intentional vegetation removal during construction. With the exception of road widening, the specific locations of project elements and the associated vegetation disturbance would be within the variable-width corridor, and that the majority of the disturbance would generally occur within the ROW. The acres of potential habitat for special status plants that are present within the ROW are shown in **Table 3.8-4** as an indication of the relative abundance of potential habitat for special status plants that could be disturbed by construction activities. Potential habitat that would be impacted within road widening areas is shown in **Table 3.8-3**.

The ability of special status plants to colonize potential habitat that has been disturbed is unknown. The rate of recovery of potential habitat that has been subsequently restored would be variable depending on a number of factors including each disturbed site's localized environmental conditions and ability to exclude weed infestations. Therefore, impacts to potential habitat could be long-term. To reduce the potential for long-term impacts to habitat, the restoration of disturbances would be based on measurable standards and success criteria that ensure that the restored habitat would attain the appropriate plant community composition over time.

Table 3.8-4 Potential Habitat within the ROW

SPECIAL STATUS SPECIES	MITCHELL (ACRES)		PEAVINE (ACRES)		POEVILLE (ACRES)		PEAVINE/ POEVILLE (ACRES)	
	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE
Upswept, Dainty, and Slender moonwort	0.2	<0.1	<0.1	<0.1	0.1	0	0.2	0
Altered andesite buckwheat	0	0	0	0	0	<0.1	0	0
Altered andesite popcorn flower	0	0	0	0	0	<0.1	0	0
Sierra Valley ivesia	0	0	0	<0.1	0	0	0	<0.1
Dog Valley ivesia	<0.1	2.0	<0.1	2.0	0	0	<0.1	2.0
Dog Valley ivesia occupied habitat	0	0	4.5	0	0	0	4.5	0
Webber ivesia	<0.1	3.0	<0.1	3.0	0	0.4	<0.1	3.0
Jaw-leaf lupine	9.1	90.2	35.6	90.1	75.5	147.3	0	120.7
Shevock bristle-moss	0	0	0	0	0	0	0	0
Lemmon milkvetch	0.7	0	<0.1	0	0.3	0.1	0.2	0.1

Design Features to Avoid or Minimize Impacts to Potential Habitat

Design features that have been developed to protect meadows, wetlands, stream riparian zones, and 100-year floodplains, as discussed in **Section 3.6.2.1,** would protect potential habitat for species dependent on wetland habitats such as upswept, dainty, and slender moonwort, Sierra Valley ivesia, Dog Valley ivesia, and Lemmon milkvetch. Due to the high concern for ivesia species, potential habitat for Webber ivesia and Dog Valley ivesia are afforded protection

through design feature SV 11. No road construction would be allowed within potential habitat for Webber ivesia and Dog Valley ivesia, and placement of poles in potential habitat would be allowed after evaluation by a qualified botanist.

Potential habitat for special status plants that is not specifically protected by design features include habitat for altered andesite buckwheat, altered andesite popcorn flower, and jaw-leaf lupine. Impacts to potential habitat would be minimized through restoration of project disturbances. To ensure the restored community would attain the appropriate plant community composition over time, design feature VG 7 requires that the success criteria that would be used for restoration would be based on a reference site pre-approved by the USFS.

Operation and Maintenance

During the operation and maintenance phase of the project, new special status plant surveys would be conducted prior to any new disturbance. As during the construction phase, all disturbances would be restored. To reduce the potential for long-term effects to potential habitat, the restoration would be based on measurable standards and success criteria. Design features that protect populations during the construction phase of the project would continue to be implemented during the operation and maintenance phase.

3.8.2.3 Mitchell Alternative

Special status plants have not been recorded within the analysis area for the Mitchell Alternative. The ROW and road widening areas for the Mitchell Alternative contain a limited amount of potential habitat for seven special status plant species (**Tables 3.8-3** and **3.8-4**). For Webber ivesia, approximately 3 acres of habitat occurs within the ROW, with less than 0.1 acre on public land. The ROW for the Mitchell Alternative contains approximately 99 acres of potential habitat for jaw-leaf lupine, and less than 2 acres of potential habitat for upswept, dainty, and slender moonwort; Dog Valley ivesia; and Lemmon milkvetch.

Design features described in **Section 3.8.3.2** would avoid or minimize impacts to potential habitat for special status plants and impacts are not expected to occur to special status plant populations. Design feature SV 2 requires surveys for special status plants in areas that would be disturbed that have not been previously surveyed. If special status plants are located during surveys (e.g., jaw-leaf lupine), they would be avoided as required by design features.

3.8.2.4 Peavine Alternative

Special status plants have not been recorded within the analysis area for the Peavine Alternative. However, the ROW and road widening corridor for the Peavine Alternative contain a limited amount of potential habitat for eight species of special status plants (**Tables 3.8-3** and **3.8-4**). The Peavine Alternative contains 3 acres of potential habitat for Webber ivesia within the ROW, most of which is on private land. The ROW of the Peavine Alternative passes near (i.e., 1,300 feet) a known population of Dog Valley ivesia and lies within the 500-meter buffer of the population. Thus, the ROW contains approximately 4.5 acres of occupied habitat of Dog Valley ivesia. The ROW for the Peavine Alternative also contains approximately 126 acres of potential habitat for jaw leaf lupine. The ROW contains less than 2 acres of potential habitat for upswept, dainty, and slender moonwort, Sierra Valley ivesia, and Lemmon milkvetch.

To minimize impacts from construction-related surface disturbance within the occupied habitat of Dog Valley ivesia, the following design features below would be implemented.

SV 9. Placement of a pole structure within the 500-meter buffer for Dog Valley ivesia may be unavoidable with the selection of the Peavine Alternative. The pole placement will be contained to the edge of the buffer to reduce potential impacts to the plant. In addition, an existing unauthorized road that currently traverses through occupied Dog Valley ivesia habitat will be closed to motorized use. Closing this road will help offset potential impacts to the Dog Valley ivesia population from the pole placement activity.

Design feature SV 9 and those described in **Section 3.8.3.2** would avoid or minimize impacts to potential habitat for special status plants and impacts are not expected to occur to special status plant populations. Closure of the existing road, as described in design feature SV 9, will result in an additional approximately 0.8 acre of impact to Dog Valley ivesia habitat. However, impacts would be short-term and closure of the road would be expected to have long-term beneficial impacts to the habitat.

3.8.2.5 Poeville Alternative

Special status plants have not been recorded within the analysis area for the Poeville Alternative. The ROW and road widening corridor for Poeville Alternative contain a limited amount of potential habitat for eight species of special status plants (**Tables 3.8-3** and **3.8-4**). The Poeville Alternative is the only alternative crossing potential habitat for altered andesite buckwheat and the altered andesite popcorn flower. However, potential habitat within the ROW is extremely limited, totaling less than 0.01 acre. Approximately 223 acres of potential habitat for the jaw-leaf lupine occurs within the ROW, most of which occurs on private land. Less than 0.5 acre of potential habitat for upswept, dainty, and slender moonwort; Webber ivesia; and Lemmon milkvetch occur within the ROW.

3.8.2.6 Peavine/Poeville Alternative

Special status plants have not been recorded within the analysis area for the Peavine/Poeville Alternative. However, a limited amount of potential habitat for eight species of special status plants occurs within the ROW and road widening corridor (**Tables 3.8-3** and **3.8-4**). The Peavine/Poeville Alternative contains approximately 3 acres of potential habitat for Webber ivesia, predominately on private land. Same as the Peavine Alternative, the ROW for the Peavine/Poeville Alternative passes near (i.e., 1,300 feet) a known population of Dog Valley ivesia and lies within the 500-meter buffer of the population. Thus, the ROW contains approximately 4.5 acres of occupied habitat of Dog Valley ivesia. The ROW for the Peavine/Poeville Alternative also contains approximately 121 acres of potential habitat for jaw-leaf lupine and less than 0.2 acres of potential habitat for upswept, dainty, and slender moonwort; Sierra Valley ivesia; and Lemmon milkvetch. To minimize impacts from construction-related surface disturbance within the occupied habitat of Dog Valley ivesia design feature SV 9 would be implemented. The additional approximately 0.8 acre of impact to Dog Valley ivesia habitat from design feature SV 9 would also occur.

3.8.2.7 Cumulative Effects

Urban development, OHV recreation, grazing, utility lines, roads and trails, and mining may have impacted special status plants and/or potential habitat for special status plants. Some present and reasonably foreseeable future resource management activities have beneficial effects on special status plants and their habitat. Present prescribed burns and mastication activities reduce fuel hazards on NFS land within the CIAA. These activities improve the resilience of NFS land to fire. The reasonably foreseeable future Dog Valley Fuels Reduction and Ecosystem Enhancement Project would improve habitat for special status ivesia species in Dog Valley, and includes design features to avoid impacts to special status plants.

Implementation of the 2006 Peavine Travel Management Plan by the USFS resulted in a number of projects within the CIAA that protected special status plants. On Peavine Mountain and in Dog Valley, roads and trails have been closed to motorized travel specifically to protect populations of Webber ivesia, altered andesite buckwheat, and altered andesite popcorn flower. The implementation of the plan has also protected areas that could be considered unoccupied potential habitat.

The reasonably foreseeable future Peavine Mountain Sustainable Trails and Restoration Project includes approximately 100 feet of trail that would cross unoccupied potential habitat for jaw-leaf lupine near the Poeville Alternative. Other reasonably foreseeable future actions are not expected to impact potential habitat of special status plants.

The proposed project would add additional impacts to unoccupied potential habitat for jaw-leaf lupine. Within the ROW, Mitchell Alternative has approximately 99 acres of potential habitat available, and the Peavine, Poeville, and Peavine/Poeville Alternatives have 126, 223, and 121 acres, respectively. Potential habitat for other special status plants that may be impacted from any of the action alternatives is presented in **Tables 3.8-2** to **3.8-4**. Cumulative impacts, regardless of the action alternative selected, would be minor because relatively few impacts to potential habitat would occur within the CIAA, and hundreds to thousands of acres of potential habitat for special status plants would remain undisturbed.

3.9 WILDLIFE

This section provides a discussion of terrestrial and aquatic biological resources in the project area and surrounding areas; describes the applicable federal and state regulations and policies related to biological resources; and analyzes the potential temporary, short-term, long-term, direct, and indirect impacts of the proposed project on common biological resources. The analysis area for wildlife resources consists of the variable-width corridor and road widening corridor for the action alternatives.

Regulatory Framework

Humboldt-Toiyabe National Forest

The USFS manages land for habitat and wildlife as well as for other resource values. One of the primary ways this is accomplished is through Management Indicator Species (MIS). MIS are identified in the Forest Plan (USFS 1986) as representing a group of species having similar

habitat requirements. Essentially, these species are analogs for all other species that might occur within a given habitat. Managing for these species allows the USFS to preserve a diversity of habitats for more common wildlife. USFS biologists are required to periodically monitor species to ensure management directions are sustaining these habitats and species.

The Sierra Nevada Forest Plan Amendment (SNFPA) amended the Forest Plan in 2001 and again in 2004 (USFS 2004). The SNFPA is designed to facilitate a regionally-consistent management of old forest ecosystem resources across USFS management boundaries and as such is called "framework" (e.g., Sierra Nevada Framework). The umbrella management also applies to other sensitive resources such as aquatic, meadow, and riparian ecosystems. The goals of the plan as they relate to wildlife resources include:

- Improve quantity and quality of useable habitat available for SNFPA species by increasing density of large trees, increasing structural diversity of vegetation, and improving the continuity and distribution of old forests across the landscape; and,
- Protect and restore desired conditions of aquatic, riparian, and meadow ecosystems in Sierra Nevada national forests.

Bureau of Land Management Eagle Lake Field Office

The BLM manages habitat for wildlife outlined in the Eagle Lake RMP (BLM 2008b) through a variety of mechanisms. Under the authority of the Federal Land Policy and Management Act of 1976, public land must be managed to protect environmental quality and ecological relationships, and where appropriate, to preserve and protect their natural condition. Additionally, the BLM has signed Memorandums of Understandings with the California Department of Fish and Wildlife (CDFW) and Nevada Department of Wildlife (NDOW), where wildlife and wildlife habitat are managed in cooperation with either of these state agencies. Overall the goals for management of habitat for wildlife are to administer public land in a manner that promotes the recovery, restoration, maintenance, or enhancement of endemic wildlife populations.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703-712) is administered by the USFWS and is the cornerstone of migratory bird conservation and protection in the United States. The MBTA provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird” (16 USC 703). However, the MBTA does not regulate habitat. The list of species protected by the MBTA was revised in March 2010, and includes almost all bird species (1,007 species) that are native to the United States.

3.9.1 Affected Environment

The following presents the habitats available to wildlife within the project area and the species that may or do occur within them.

3.9.1.1 Existing Setting

The analysis area ranges in elevation from roughly 5,300 feet to 7,300 feet AMSL and encompasses a wide range of vegetation types and terrain. Several large-scale fires, including the

Cottonwood, Mitchell Canyon, and the Peavine Complex fires (**Figure 3.7-1**), have burned thousands of acres in the Dog Valley and Peavine Peak areas in the past two decades (USFS 2014i). Wildfire has caused an uneven distribution of tree size and age within the forested communities in the region. More recent fires have been fairly large and vegetation communities have shifted to early seral stages with many weeds and ruderal species, including cheatgrass. Current conditions of the vegetation communities range from moderately to significantly disturbed and fragmented. Portions of several of the action alternatives border urban areas and human disturbances to the landscape, such as OHV use and illegal dumping. Biological disturbances of plant communities occur as well. A 2008 USFS survey found Jeffrey pine beetle, fir engraver beetle, pine engraver beetle, and mountain pine beetle as a source of tree mortality in Dog Valley (USFS 2009).

Wildlife Habitat

For wildlife, vegetation communities are aggregated into general habitat classifications. Available habitat (as defined by vegetation community) on the NFS land, BLM-administered public land, and private land within the variable-width corridor of each action alternative has been previously presented in **Table 3.7-1**.

Bitterbrush-sagebrush habitat is the most widely available habitat within the variable-width corridor for each action alternative. Other prevalent habitats within the variable-width corridor of action alternatives include forest (i.e., eastside pine), chaparral (with mixed scrub), and annual grasses. For wildlife, aspen and riparian communities are an important habitat type but only comprise less than 1 percent of the available habitat within the variable-width corridor. Both the Poeville and Peavine/Poeville Alternatives have substantive annual grassland habitats at 33 percent and 24 percent respectively, reflecting the past wildfire activity within their variable-width corridor, particularly on the south facing slopes of Peavine Peak.

Management Indicator Species

The MIS that occur or are likely to occur within the project area are listed below and a detailed description of five of them is provided. Three of the MIS, northern goshawk, yellow warbler, and Lahontan cutthroat trout (LCT) are described and addressed in **Section 3.10** as special status species.

- Northern goshawk;
- Lahontan cutthroat trout;
- Yellow warbler;
- Yellow-rumped warbler;
- Hairy woodpecker;
- Williamson's sapsucker;
- Mule deer; and
- Macroinvertebrates.

Yellow-Rumped Warbler

Yellow-rumped warblers are considered highly adaptable and can be found in a variety of habitats including coniferous forests, mixed woodlands, deciduous forests, pine plantations,

aspens and in the project area are found primarily in forested habitats at middle elevations (Floyd et al. 2007). According to U.S. Geological Survey Breeding Bird Survey information (Sauer et al. 2011), population trends of yellow-rumped warblers in the Sierra Nevada have been stable between 1966 and 2009 but have declined in Nevada. Within the project area, yellow-rumped warblers would likely be found in the mixed conifers stands. Yellow-rumped warblers were detected by the USFS during migratory bird surveys (USFS 2011c) and were noted along the Poeville Alternative in 2012.

Hairy Woodpecker

Hairy woodpeckers are widespread throughout North America and within the general project area, and are associated with deciduous and coniferous woodlands (Jackson, Ouellet, & Jackson 2002). Hairy woodpeckers nest in trees with a minimum diameter of 10 inches and minimum height of 15 feet (Sousa 1987) and across their range, the diameter of trees was the characteristic most correlated for nest use. Within the project area, suitable habitat for this species includes portions of the aspen vegetation community and other areas where large-diameter trees occur. USFS migratory bird surveys in Dog Valley west of the project area detected hairy woodpeckers (USFS 2011d).

Williamson's Sapsucker

Williamson's sapsuckers are an uncommon species found along the length of the Sierra Nevada where they are considered a year-round resident (Gyug, Dobbs, Martin, & Conway 2012). The species breeds at middle to high elevations, generally from 4,900 to 10,500 feet AMSL in montane mixed deciduous-coniferous forest with aspen as an important nesting substrate (Gyug et al. 2012). Nests are located in fairly large snags (1 to 2.5 feet in diameter) (Great Basin Bird Observatory 2010), and the availability of trees with heartwood rot is a critical component of breeding habitat (Gyug et al. 2012). The U.S. Geological Survey Breeding Bird survey (Sauer et al. 2011) reports populations in the Sierra Nevada have been stable from 1966 to 2009. Aspen communities, particularly where they occur in proximity to forest communities, provide potential habitat for this species within the project area. Migratory bird surveys conducted in Dog Valley resulted in no detections of Williamson's sapsuckers; however, these birds have been detected nesting in the Carson Range (Floyd et al. 2007), which is southwest of the project area.

Mule Deer

The majority of the deer that occupy the project area are part of the Verdi sub-herd, which is a component of the larger Loyalton-Truckee Interstate herd. The Loyalton-Truckee Interstate herd is broadly distributed from the east side of Donner Summit, north to Sierra Valley, northeast to the Peterson Range in Nevada, south to Glenshire, California, and east to the western edge of Reno, including Peavine Peak.

A the status report produced for the 2011-2012 season (NDOW 2012b) indicated the herd was stable and had increased in size, likely due to optimal precipitation of the preceding winter. The Verdi sub-herd has endured substantial declines largely due to loss of habitat from urban development, wildfires, increased recreation (NDOW 2012b), and direct mortality due to vehicular collisions.

Habitat for mule deer is commonly characterized by areas of thick brush or trees interspersed with openings. Mule deer prefer browsing on new growth of shrubs, forbs, and some grasses. Fawning occurs in moderately dense shrubland and forest, dense herbaceous vegetation, and high-elevation riparian and mountain shrub habitats with available water and forage. Fawn production is closely tied to the abundance of succulent, green forage during spring and summer months.

Mule deer often migrate from lower to higher elevations in spring and summer where water and forage are more available. Migration between seasonal ranges generally occurs along well-established routes (Innes 2013). Seasonal range habitats are broadly defined using the following parameters:

- **Winter** – A mosaic of palatable brush such as bitterbrush, desert peach, sagebrush, which provides shelter and forage that is free of snow, commonly found at lower elevations;
- **Transitional** – Similar habitat as winter range but is used between summer and winter. These habitats should support sufficient browse and cover such as bitterbrush-sagebrush and mountain mahogany, or available forbs, commonly found in middle elevations. These habitats are used in mild winters as well;
- **Summer and Fawning** – These habitats are commonly at higher elevations. Fawning habitat generally consists of aspen stands, riparian, or montane chaparral, where succulent browse is available. Cover both for thermal regulation and seclusion of does and fawns is particularly important; and
- **Migratory Corridors** – These are traditional areas where mule deer move between seasonal habitats.

Winter range habitat is particularly important to mule deer because these lower elevation brush stands are often snow free and readily accessible for browsing and cover. During wet winters when significant snowfall occurs at higher elevations, this habitat becomes even more critical. The entire project area supports some facet of seasonal range habitat, whether it is transitional, summer and fawning, or winter. The most abundant habitat available to mule deer within the project area is bitterbrush-sagebrush which provides winter, summer, and transitional habitat. Additionally, the Truckee River, bounded by Interstate 80, is considered a critical migratory corridor for the Loyalton-Truckee Interstate herd as deer move between California and Nevada during the winter and late spring seasons.

The CDFW and NDOW have mapped and refined the seasonal habitats in the management of the Loyalton-Truckee herd as:

- **Summer Use** – That part of the overall range where 90 percent of the individuals are located between spring green-up and the first heavy snowfall;
- **Crucial Winter Use** – Areas within the winter range where 90 percent of the individuals are located when annual snow pack is at its maximum and/or temperatures are at a minimum in the 2 worst winters out of 10;
- **Winter-Spring High Use** – That part of the winter range where densities are at least 200 percent greater than the surrounding winter range density during the same period used to define winter range in the average 5 winters out of 10; and

- **Year-Round Use** – An area that provides year-round range for a population of mule deer. The resident mule deer use all of the area all year; it cannot be subdivided into seasonal ranges although it may be included within the overall range of the larger population.

The project area contains seasonal habitat, including crucial winter range habitat that is particularly important for mule deer. The USFS has set aside the Mitchell Canyon Deer Management Area (**Figure 3.9-1**), which includes 2,000 acres for mule deer winter range. The management area is located within the project area, including within areas of the variable-width corridor of the Mitchell and Peavine Alternatives. Seasonal closure for motorized vehicles occurs during winter months (November 18 through April 1) to protect deer from disturbance during this period. The Mitchell Canyon Deer Management Area and important habitat areas delineated by the CDFW and NDOW are displayed on **Figure 3.9-1**.

The CDFW and NDOW have radio-collared numerous mule deer from the Loyalton-Truckee herd to study their seasonal movements (data from 2006 through 2012). Based on these studies, mule deer use of the project area is substantially greater within private property adjacent to the Reno urban interface (**Figure 3.9-1**).

Table 3.9-1 summarizes the area of mapped mule deer habitat within the variable-width corridor of each action alternative. Areas that are mapped as Winter-Spring High Use also represent Crucial Winter Use, but are currently utilized more heavily that other Crucial Winter Use areas, as documented by the presence of radio-collared deer.

Table 3.9.1 Mule Deer Seasonal Use Habitat within the Variable-Width Corridor

HABITAT	MITCHELL		PEAVINE		POEVILLE		PEAVINE/POEVILLE	
	PUBLIC LAND[1]	PRIVATE LAND	PUBLIC LAND[1]	PRIVATE LAND	PUBLIC LAND[1]	PRIVATE LAND	PUBLIC LAND[1]	PRIVATE LAND
Winter-Spring High Use	0	0	0	0	27.6	415.9	13.2	190.6
Winter-Spring Mule Deer Concentration Areas	0	0	0	0	0	39.7	0	39.7
Crucial Winter Use	152.8	17.5	165.1	21.6	1.33	21.8	0.7	21.8
Summer Use	315.6	12.6	63.4	11.7	13.8	11.7	63.1	11.7
Year-Round Use	149.7	128.9	296	128.6	73.9	147.1	250.3	129
Total	618.1	159	524.5	161.9	116.6	636.2	327.3	392.8

[1] Includes 13.8 acres of Summer Use and 1.3 acres of Crucial Winter Use on public land administered by the BLM at the Bordertown Substation.

The NDOW big game status reports for the past three years (NDOW 2011; 2012b; 2013a) implicate habitat loss particularly from urban/suburban development, wildfires, and displacement from recreation as critical issues for the Loyalton-Truckee Interstate herd. The NDOW management objectives for the Loyalton-Truckee Interstate herd, which numbers around 1,500 individuals, are "no net loss", meaning any serious impediment to the seasonal movement of deer, substantial removal of crucial winter habitat, or activities that might prevent access to critical seasonal habitat could impact this subset of the Loyalton-Truckee Interstate herd (Cox 2012).

Macroinvertebrates

Freshwater benthic macroinvertebrates (benthos) are animals without backbones that are larger than 0.5 millimeter (the size of a pencil dot). These animals live on rocks, logs, sediment, debris, and aquatic plants during some period in their life. The benthos include crustaceans such as crayfish, clams and snails, aquatic worms and the immature forms of aquatic insects such as stonefly and mayfly nymphs. Macroinvertebrates are an important part of the food chain, especially for fish. Many benthos feed on algae and bacteria, which are on the lower end of the food chain. Some shred and eat leaves and other organic matter that enters the water. Because of their abundance and position in the aquatic food chain, macroinvertebrates play a critical role in the natural flow of energy and nutrients. As macroinvertebrates die, they decay, leaving behind nutrients that are reused by aquatic plants and other animals in the food chain. Macroinvertebrates are likely present within the perennial streams found in the project area.

Common Wildlife

A variety of common wildlife species occur within the project area because of the diversity of habitat types that are available. Species presented below either have been documented, are assumed to occur within the project area (NDOW 2012a), or could occur as ascertained using the California Wildlife Habitat Relationship System tool (CDFW 2005a).

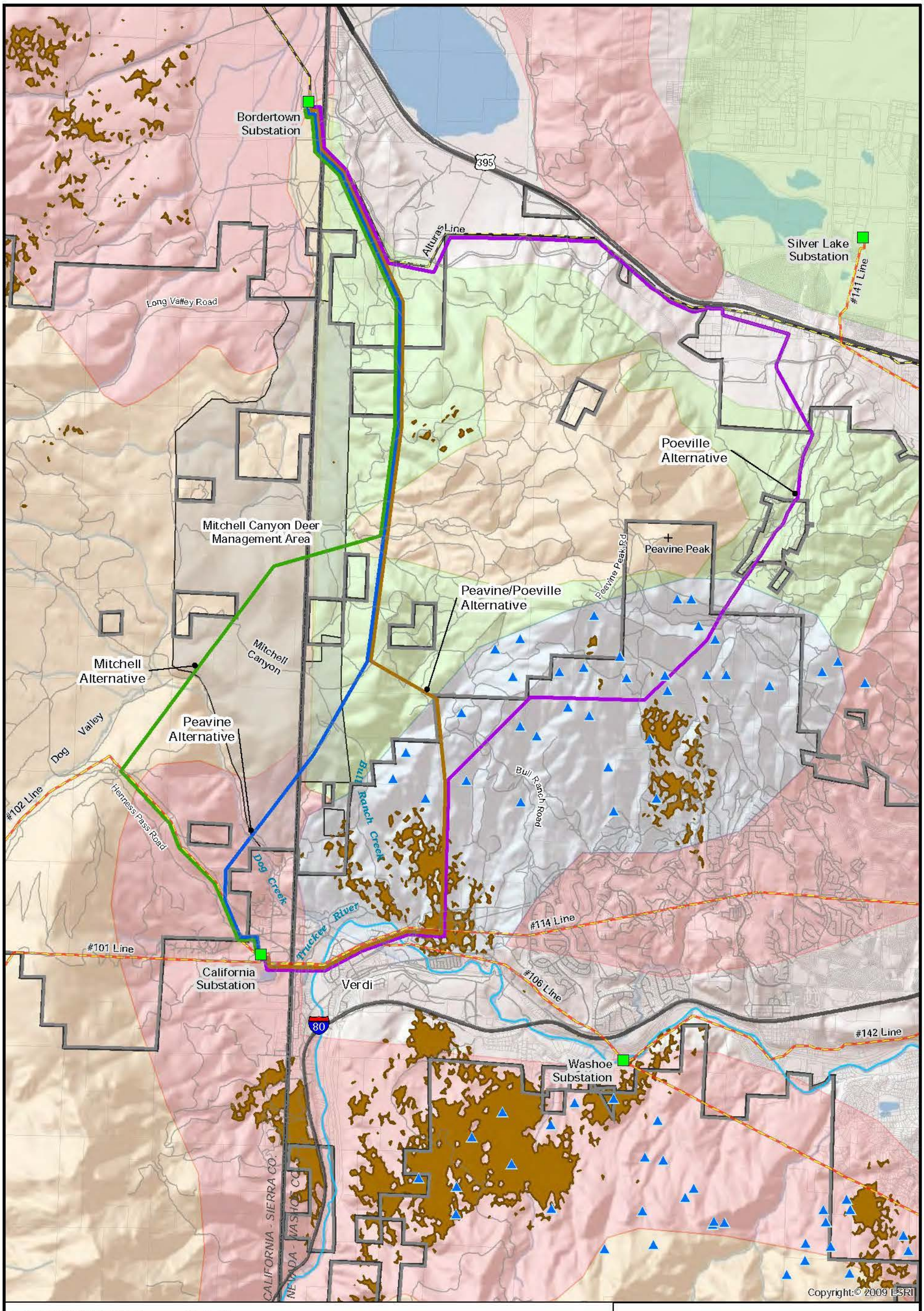


FIGURE 3.9-1
MULE DEER HABITAT

BORDERTOWN TO CALIFORNIA 120 kV TRANSMISSION LINE EIS

Mammals

Mammalian species, in addition to mule deer, that commonly occur within the bitterbrush-sagebrush and chaparral habitats are badger, bobcat, mountain lion, coyote, and various rodents including California ground squirrel, pocket mice, chipmunks, jackrabbit, cottontail, and yellow-bellied marmot. Within forest and aspen communities (i.e., habitats) black bear, yellow-pine chipmunk, raccoon, striped skunk, meadow jumping mouse, deer mice, and within or adjacent to the Truckee River, North American river otter and weasel are expected to occur.

Birds

The project area is within the Pacific Flyway for migratory birds and within the contact between Great Basin and Sierra Nevada Ecosystems. The area supports seasonal habitats for hundreds of birds. Depending on the season, the assemblages of birds occupying the project area would differ; some occurring only in the breeding season, while others utilizing the habitats for seasonal movements or occurring as incidentals. Over a number of years the USFS has conducted surveys for migratory birds within Dog Valley. The USFS recorded 38 species of birds, representing breeding birds within the sampled habitats (e.g., meadow, forest) (USFS 2011d).

Aspen habitat is favored by a variety of cavity-nesting birds, such as bluebirds, sapsuckers, downy woodpeckers, nuthatches, and chickadees. Species of birds that may occur within the brush and conifer habitat of the project area include: house finch, Bewick's wren, rock wren, Cassin's finch, California quail, horned lark, meadow lark, spotted towhee, dark-eyed junco, northern flicker, Steller's jay, scrub jay, black-headed grosbeak, ruby-crowned kinglet, Brewer's blackbird, and pine siskin.

The Truckee River provides habitat for waterfowl and water dependant birds such as mallard duck, common merganser, wood duck, American dipper, belted kingfisher, heron and swallows.

A number of raptors maybe found within the available habitats. Raptors include red-tailed hawk, American kestrel, sharp-shinned hawk, Cooper's hawk, osprey, northern harrier, northern saw-whet owl, great-horned owl, long-eared owl, and western screech owl, among others.

Some of the birds that may or do occur within the project area may be considered sensitive species or birds of conservation concern. Birds considered sensitive species by USFS or BLM are addressed in **Section 3.10**. Birds of conservation concern that may potentially occur within the project area are listed in **Table 3.9-2**.

Table 3.9-2 Migratory Birds of Conservation Concern Potentially Occurring in the Project Area

COMMON NAME	SCIENTIFIC NAME
Cinnamon Teal	Anas cyanoptera
Lesser Scaup	Aythya affinis
Sooty Grouse	Dendragapus fuliginosus
Snowy Egret	Egretta thula
Prairie Falcon	Falco mexicanus
Band-tailed Pigeon	Patagioenas fasciata
Short-eared Owl	Asio flammeus
Common Poorwill	Phalaenoptilus nuttallii
Calliope Hummingbird	Selasphorus calliope
Rufous Hummingbird	Selasphorus rufus
Lewis's Woodpecker	Melanerpes lewis
Olive-sided Flycatcher	Contopus cooperi
Gray Flycatcher	Empidonax wrightii
Sage Thrasher	Oreoscoptes montanus
Virginia's Warbler	Oreothlypis virginiae
Hermit Warbler	Setophaga occidentalis
Green-tailed Towhee	Pipilo chlorurus
Brewer's Sparrow	Spizella breweri
Sagebrush Sparrow	Artemisiospiza nevadensis

Sources: (Great Basin Bird Observatory 2010); (USFWS 2008)

Reptiles and Amphibians

The project area provides diverse brush habitat for reptiles and amphibians. Common species expected to occur are: Great Basin rattlesnake, western whipsnake, rubber boa, gopher snake, Sierra garter snake, western yellow-bellied racer, western fence lizard, long-nosed leopard lizard, zebra-tailed lizard, and horned lizards. Amphibians that may occur in riparian and wetland areas include western toad, Sierran tree (chorus) frog, and American bullfrog.

Aquatic Species

A range of fish species may occur in Dog Creek and/or the Truckee River. According to NDOW (2012a), brown trout, Lahontan redside, mountain sucker, mountain whitefish, Paiute sculpin, rainbow trout, speckled dace, and Tahoe sucker occur within the project area.

3.9.1.2 Mitchell Alternative

The Mitchell Alternative, as presented in **Table 3.7-1**, transects the greatest amount of forest and aspen habitats compared with the other action alternatives. Consequently, more species dependent on forested habitat would be likely to occur within its analysis area than the other alternatives. However, there would be less diversity of species dependent on riparian habitat because the Mitchell Alternative does not cross the Truckee River. The Mitchell Alternative would cross Dog and Sunrise Creeks, both of which provide minimal riparian habitat. Species associated with these habitats are presented above. As with all alternatives, the most dominant habitat type is bitterbrush-sagebrush. The MIS that may occur within the analysis area are yellow-rumped warbler, Williamson's sapsucker, hairy woodpecker, mule deer, and macroinvertebrates.

The analysis area of this alternative contains the most mapped mule deer summer habitat and the second most mapped crucial winter habitat of the alternatives (**Figure 3.9-1, Table 3.9-1)**. Data from the collared deer seem to indicate that deer use these habitats as transitional rather than crucial winter as deer were not documented using the habitat as winter-spring high use. The collar data however, do not reflect deer that may occupy the analysis area year-round.

The analysis area has the least amount of fragmented habitat of any alternative, with approximately 79 percent of the area fragmented by roads or trails. The areas with the fewest roads or trails are within Mitchell Canyon and near Dog Creek.

3.9.1.3 Peavine Alternative

Habitats within the analysis area are similar to those of the Mitchell Alternative, but would be fewer because the alternative is shorter in length. The analysis area contains more bitterbrush-sagebrush and less conifer than the analysis area of the Mitchell Alternative. Because the Peavine and Mitchell Alternatives coincide along much of their length, similar amounts of chaparral and mixed scrub occur within its analysis area as the Mitchell Alternative. Riparian and stream habitats are crossed at Dog and Sunrise Creeks. Species that may occupy these habitats are presented above. The MIS that could occur within the analysis area are yellow-rumped warbler, Williamson's sapsucker, hairy woodpecker, mule deer, and macroinvertebrates.

The analysis area for the Peavine Alternative has the most mapped mule deer year-round use habitat (**Figure 3.9-1, Table 3.9-1)**, along with significant crucial winter use habitat, but no data exists for how deer use these habitats. The analysis area does not appear to support winter-spring high use habitat, and habitat is therefore likely more transitional habitat.

The degree of habitat fragmentation within the analysis area and surrounding proximity varies. Less disturbed habitat occurs near Mitchell Canyon and Bull Ranch Creek, and southwest below Dog Creek. However, the habitat along approximately 85 percent of the Peavine Alternative is fragmented by numerous existing roads and trails (**Figure 3.9-1**). Despite this, the analysis area appears to contain less habitat fragmented from existing roads than either the Poeville or Peavine/Poeville Alternatives.

3.9.1.4 Poeville Alternative

Habitat within the analysis area of the Poeville Alternative is diverse and includes all of the habitats described in **Table 3.7-1**. The analysis area contains the least amount of forested habitat relative to the other action alternatives. This analysis area has the most bitterbrush-sagebrush and annual grasses and forbs habitats. Riparian habitats are available along three perennial streams: Bull Ranch Creek, Jones Creek, and the Truckee River. As a result, a diversity of species, particularly migratory bird species, may occur within the analysis area. Macroinvertebrates may also occur in association with the perennial streams. Yellow-rumped warblers and mule deer were noted along this alternative during site visits in 2012. Historic mining features located near the Poeville Alternative may provide habitat for bats or other species.

According to NDOW radio-collar data, the analysis area of the Poeville Alternative contains some of the most important and well used mule deer habitat of all of the alternatives. Radio collar data spanning a number of years and seasonal winter surveys indicate mule deer congregate and remain relatively stationary during both winter and spring seasons in habitats within the analysis area. The winter-spring high use habitat primarily occurs on private land (**Figure 3.9-1**; **Table 3.9-1**). The concentration areas total nearly 40 acres within the analysis area. The analysis area also contains year-round habitat both on NFS land and private land and crucial winter habitat on private land.

The analysis area contacts Reno's urban interface and bisects suburban areas along the northern and southern areas (e.g., Verdi), resulting in extensive road networks, including roads and trails that fragment habitat. The Poeville Alternative has approximately 0.4 mile of centerline with little fragmentation southwest of Peavine Peak. However, approximately 97 percent of the alternative has roads or trails along its length that fragments the habitat with relative density. Where the lower road density occurs, it roughly corresponds to the areas of mule deer concentrations, hemmed in by urban neighborhoods. The distribution line that brings power to the summit of Peavine Peak provides some of the existing road disturbance, particularly on the north slope of Peavine Peak.

3.9.1.5 Peavine/Poeville Alternative

The analysis area of the Peavine/Poeville Alternative contains similar forested habitat as the Peavine Alternative, but joins the Poeville Alternative on private land, where it crosses shrub and annual grass habitats that are also crossed by the Poeville Alternative. The analysis area of the Peavine/Poeville Alternative also contains the same aquatic habitat associated with the Truckee River as the Poeville Alternative. The analysis area contains approximately 16 acres of aspen and willow habitats combined, which is more than either the Peavine Alternative or the Poeville Alternative. Aspen and willow habitats are potentially suitable habitat for a variety of avian species including MIS. The MIS expected to occur within the analysis area would include mule deer, yellow-rumped warbler, Williamson's sapsucker, hairy woodpecker, and macroinvertebrates.

Mule deer seasonal use habitats occur within the analysis area of the Peavine/Poeville Alternative, and the mapped habitats are similar to the Poeville Alternative. For example, within the analysis area, the alternative contains approximately 75 acres of summer use habitat and 379 acres of year-round habitat (**Table 3.9-1**). As with the Poeville Alternative, mule deer winter-

spring high use habitat occurs within the analysis area, totaling about 40 acres of mapped deer concentration areas, as defined by collar data (**Figure 3.9-1**).

Fragmentation of habitat from existing roads is greater within the analysis area of the Peavine/Poeville Alternative than the other action alternatives. Beyond the analysis area, some of the habitats are less fragmented, although fragmentation increases in Verdi.

3.9.2 Environmental Consequences

Methods of Analysis

The potential effects to wildlife resources are primarily derived by analyzing how the proposed construction, operation, and maintenance activities would impact the existing management direction for MIS and wildlife habitats. With the exception of road widening, the specific locations of project elements and the associated habitat disturbance would be within the variable-width corridor, and the majority of the disturbance would generally occur within the ROW. Thus, the acres of available habitat types that are present within the ROW/easement are used as an indication of the type and relative abundance of habitat that may be impacted.

Potential effects on MIS were evaluated by using the indicator of determining the potential for an alternative to result in a contribution to a current or predicted downward trend in habitat capability that would reduce a species' existing distribution for a MIS.

3.9.2.1 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur. Thus, there would be no habitat loss, alteration, or fragmentation, and no wildlife disturbances from the existing conditions within the project area. Wildlife mortality incidental to construction and from increased predation and collisions associated with the proposed transmission line would not occur, nor would wildlife disturbance and displacement associated with construction and maintenance noise and activities. Wildlife assemblages would occur as they do currently.

3.9.2.2 Effects Common to All Action Alternatives

The proposed project may impact wildlife by altering migration and movement corridors by increased human disturbance and noise, increased habitat fragmentation, loss of habitat through removal of vegetation, and increased wildlife mortality.

Construction

Wildlife Displacement and Habitat Removal

During construction, noise and human disturbances may cause wildlife to flee the area into surrounding habitat. Noise and human disturbances would be temporary for the duration of construction and only impact the individuals that may occur within or near the proposed ROW/easement. Thus, the displacement of wildlife from noise and human disturbances associated with construction would not have any short-term or long-term impacts on population viability.

For all action alternatives, the surface disturbance required for project construction would result in the loss of available habitat for general wildlife, MIS, and migratory birds. Habitats that may be lost include browse, foraging, and cover habitat, and specifically for avian species, nesting substrate habitat. Mule deer have the greatest potential to be affected from habitat disturbance due to the limited availability of winter range habitat within the project area (**Figure 3.9-1**). **Table 3.9-3** presents the acres of potential habitat within the proposed ROW/easement that could be altered or lost from project construction activities and lists the species that may be displaced from within these and similar adjacent habitats. It is not anticipated that all of the vegetation within the ROW/easement would be cleared for construction.

Table 3.9-3 Acres of Wildlife Habitats within the ROW/Easement of Action Alternatives

SPECIES	VEGETATION/ HABITAT	MITCHELL		PEAVINE		POEVILLE		PEAVINE/POEVILLE	
		NFS	PRIVATE	NFS	PRIVATE	NFS	PRIVATE	NFS	PRIVATE
Yellow-rumped warbler, Hairy woodpecker, Williamson's sapsucker, Migratory birds	Mixed Conifer – White Fir Eastside Pine Jeffrey Pine	26.7	2.9	14.7	3	0	1.7	8.0	2.2
Mule deer (summer use), Migratory birds	Willow (Riparian)	0	0.2	0	0.2	0.3	1.4	0.1	1.4
Hairy woodpecker, Williamson's sapsucker, Mule deer (summer use may include Aspen), Migratory birds	Aspen Mixed Riparian Hardwood	2.3	0	1.1	0	0	1.2	1.1	0.8
Mule deer, Migratory birds	Mountain Mahogany Great Basin Mixed Scrub Bitterbrush-Sagebrush Chaparral-Snowbrush Mountain Sagebrush	63.8[1]	8.3	69.5[1]	8.3	55.3[1]	41.3	50.7[1]	18.1
Mule deer (Big sagebrush), Migratory birds	Big Sagebrush Low Sage Annual Grasses and Forbs and Ruderal Urban/Developed	3.4	6.9	3.6	7	3.6	81	1.7	41.1
Macroinvertebrates	Mixed Riparian Hardwood Wet Meadow Water (Perennial Streams)	0 Dog Creek	2.3 Sunrise Creek	0 Dog Creek	2.3 Sunrise Creek	0	0.8 Jones & Bull Ranch Creeks, Truckee River	0	3.0 Bull Ranch Creek, Truckee River

Source: (USFS 2014f).

[1] Includes approximately 15 acres of Bitterbrush-Sagebrush community on BLM-administered public land at the Bordertown Substation.

Removal of Forested Habitats

To allow construction activities, trees within forested habitats would be removed at wire setup sites, access roads, and road widening areas. Additionally, trees within the transmission line clearance area would be cleared initially during construction, and then repeatedly cleared throughout the operational life of the project to comply with state and federal safety regulations. From the most abundant to least abundant, forested habitats include eastside pine, mixed conifer-white fir, plantation, aspen, and Jeffrey pine. The Mitchell Alternative has the most eastside pine community, while the Poeville Alternative has the least (**Table 3.7-2**, **Section 3.7 Vegetation**).

Design Features to Avoid/Minimize Disturbance to Wildlife and Habitat Removal

Design features (**Appendix B**) were developed to minimize potential impacts to wildlife from noise and human disturbance associated with project construction. To avoid disturbing wintering mule deer, design feature WL 6 precludes construction activities from November 25 through May 25 in areas mapped as crucial winter or winter-spring high use. Design feature WL 3 avoids disturbance to nesting birds by requiring that construction activities occur outside the typical avian breeding season (April 1 to July 31). If construction activities cannot be avoided during this time period, surveys will be conducted immediately prior to construction to locate active nesting areas (WL 4). Implementation of the design features would help to minimize direct impacts to wildlife during construction activities.

Design features were also developed to minimize the loss of important habitat types. For example, design features protect meadows, riparian, and riparian woodland areas. Design features prohibit new road crossings over perennial streams and prohibit the placement of poles, staging areas, and fuel storage areas near floodplains (which support riparian vegetation) and wetlands. Design feature SV 3 provides added protection on NFS land by specifically prohibiting construction disturbance within wet meadows. These habitats are important to wildlife because they provide foraging, fawning, and nesting habitat to many wildlife species.

To minimize impacts to forested communities and large-diameter trees, design feature VG 1 requires that the placement of the ROW would avoid, wherever possible, isolated groups of trees and/or groups of trees with an average diameter at breast height of 30 inches or greater. Large-diameter trees are important to many species, including hairy woodpecker and Williamson's sapsucker, which are both MIS and require large-diameter trees for nesting.

Most surface disturbance from construction activities would be temporary and vegetation communities would be restored. Design feature VG 7 promotes successful restoration of disturbed habitat by requiring success to be based on reference sites selected by the USFS. To encourage the rapid recovery of vegetation communities that benefit mule deer, VG 5 requires that brush species be cut at ground level to preserve root systems allowing for re-growth. Accordingly, most impacts on wildlife from habitat disturbance would be short-term. Impacts would generally be negligible to minor because only a fraction of available habitat in the project area would be impacted.

Long-term impacts would occur from the loss of forested habitats within the transmission line clearance area. Impacts from the removal trees from forested habitats would be measurable, but the overall impact to wildlife would be minor because the number of trees removed would be

few in relation to the existing and available trees within and adjacent to the project area. Given the acres of eastside pine habitat that would be removed from construction and within the transmission line clearance area, impacts on this habitat type would be negligible to minor. Potential impacts to the other forested habitat types would be negligible to minor because between less than 1 percent and 7 percent of these types that are available with the project area would be cleared from any of the action alternatives.

Habitat Fragmentation

Construction of any of the action alternatives has the potential to fragment habitat at varying degrees for most wildlife species. Habitat fragmentation creates altered landscapes that are fundamentally different from those shaped by natural disturbances that species have adapted to over evolutionary time (Franklin, Noon, & George 2002). Habitat fragmentation can result from many different types of disturbances, including noxious weed invasions and road development.

Habitat fragmentation by noxious weed infestations would be small and localized, limiting the amount of habitat that would be fragmented. Shrub habitats are the most common habitat type within the project area that could be affected by weed infestations.. Shrub vegetation communities are particularly susceptible to invasion of non-native plant species when disturbed. When non-native species invade native plant communities, they alter the plant assemblages, the structure of the community, and the succession progression of the native habitat through competition of resources. This in turn alters the wildlife species that may utilize the communities. Other habitat types including mixed conifer-white fir and wet meadow are also at risk for non-native species following vegetation removal, particularly when source populations of non-native species occur in close proximity. Conversion of habitat from a native vegetation community to one that is non-native can fragment habitat for many wildlife species that rely on continuous stands of native vegetation for forage and cover. As described in **Section 3.7.4,** to address the potential for infestations, all temporary construction disturbances would be treated for noxious weeds. The treatment and the subsequent monitoring of the treatment success would follow a detailed weed treatment plan that would be included as part of the COM Plan.

Habitat fragmentation from an increase in road density has recognized effects to wildlife. Rost and Bailey (1979), (as cited in Cox et al. 2009, p. 37) found an inverse relationship to habitat use by deer and elk with distance to roads. This displacement can result in under-use of the habitat near roads while overuse may occur in other locations. Some factors from an increase in road density (i.e., predator use, human use) can result in energetic costs (increased energy expenditure) to deer, particularly during winter when nutritional browse is low and movement through snow increases energetic demand (Parker, Robbins, & Hanley 1984). These types of disturbances have been described impacting habitat in a non-linear fashion, and are based on the idea that a road's ecological effects extend many times wider than the road itself and that as road density increases, it correlates to a reduction in wildlife diversity and abundance.

Impacts to most wildlife species as a result of habitat fragmentation would generally be short-term because new access roads would be restored and vegetation communities would be expected to recover within several years. On less ecologically resilient sites, such as south-facing slopes, vegetation communities may never fully recover. The loss of forest communities within the transmission line clearance area would fragment forested habitat. The impact to wildlife from

fragmentation due to the loss of forested habitat within the transmission line clearance area would be long-term.

Design Features to Avoid/Minimize Habitat Fragmentation Effects

Design features (**Appendix B**) would be implemented to reduce the threat of noxious weed invasions, as described in **Section 3.7.4.2,** which would avoid and minimize the subsequent effects of habitat fragmentation. Design features NW 1 through NW 10 minimize the spread of noxious weeds through identification, avoidance, treatment, monitoring, reduction of vectors, and prevention. Areas that could be affected by noxious weed infestations would be small and localized, limiting the amount of habitat that would be fragmented. The implementation of a weed treatment plan and design features ensure that the potential for habitat fragmentation from weed infestations would be low and any weed infestations are effectively eradicated. The impacts to wildlife from habitat fragmentation caused by noxious weed infestations would be temporary to short-term depending on the recovery rate of native vegetation after treatment of the noxious weeds. The viability of wildlife populations would not be likely to be impacted from noxious weed infestations. Impacts that do occur to wildlife due to habitat fragmentation from noxious weeds attributed to the proposed project would be minor to negligible.

To avoid long-term effects of habitat fragmentation from the construction of new access roads, design features RT 3 through RT 7 would ensure that vegetation communities are not disturbed by unauthorized motorized travel on restored roads. Per design feature RT 6, a signage and monitoring plan that includes installing signs notifying the public that construction access roads are closed and are being restored and monitoring the barriers for effectiveness at preventing motorized use. These design features would ensure that increased human presence or accessibility from newly created access roads does not occur, particularly within crucial winter or fawning habitat for mule deer.

Increased road density resulting from the proposed project would be temporary because all newly created access roads for construction would be restored, as would any existing non-designated roads on NFS land are widened and used for construction access (see **Section 2.3.2.2**). During construction newly created access roads on NFS land would not be designated on or added to the MVUM (USFS 2011a), and therefore increased public accessibly via motorized vehicles would not occur during construction or afterwards when roads are reclaimed.

The viability of wildlife populations, including mule deer populations would not be likely to be impacted from habitat fragmentation caused by short-term loss of habitat on newly constructed access roads or long-term loss of forest communities in the transmission line clearance area. Nor would the impacts result in a contribution to a current or predicted downward trend in habitat capability for MIS. This is supported by the existing wildlife populations continuing to persist within the project areas despite the majority of the habitat being fragmented by existing roads, trails, pipelines, power lines, and other similar linear disturbances.

Summary of Construction Related Impacts

Based on the above analysis, short-term and any long-term potential impacts during construction activities from habitat disturbance, removal, alteration, or fragmentation for most wildlife species, such MIS and migratory birds, would be negligible to minor. This is because the project

would impact a minimal amount of existing available habitat relative to the amount of unaffected adjacent habitat. Additionally, design features would be implemented to address and minimize impacts from human disturbance, noxious weeds, habitat removal, and habitat fragmentation. The potential impacts would not result in reduced population viability for wildlife species that may occur within the project area, nor would they diminish habitat suitability for a variety of species. The design features require reduction in habitat disturbance, avoiding sensitive habitats, construction timing restrictions, post-construction restoration and monitoring, and installing blockades to prevent motorized travel on newly created roads and to ensure these roads are successfully restored.

Operation and Maintenance

A number of long-term impacts may occur to wildlife through the operational life of the proposed transmission line. These impacts include wildlife collisions with the lines and increased predation by raptors due to the increased availability of perches offered by the structures.

Potential for Avian Mortality

Transmission lines pose a threat to avian species through collision with the line during flight. The upper shield wire is the largest threat to birds as it is a smaller diameter than the other lines and likely less visible. Vulnerability to collisions depends on many factors including bird behavior and maneuverability, topography, weather, and power line design and placement. Bird collisions with power lines have been documented for decades, and the risk of collision is considered highest in areas where birds congregate, such as where power lines bisect daily flight paths to meadows, wetlands, and river valleys. Generally, heavy bodied birds such as cranes, swans, pelicans, and waterfowl are considered most at risk of collisions in locations where low-light conditions or other low-visibility situations exist (Avian Power Line Interaction Committee 2012).

The Truckee River provides habitat for waterfowl and shorebirds, where birds making daily trips along the river would encounter lines crossing the river. Existing transmission lines cross the Truckee River and two alternatives (Poeville and Peavine/Poeville) would use the same corridor and the inactive 632 line would be replaced along with poles within this stretch. It is unknown if avian mortality occurs to waterfowl or other species that frequent the river where the lines cross. The proposed transmission line would not increase the potential for avian collisions; the potential would essentially remain a constant. The proposed project has the potential to cause mortality to individual birds as a result of line-strike. This impact would be considered a long-term minor impact. However, it would not result in reduced population viability for any given species or reduce the species existing distribution, nor would it result in a contribution to a current or predicted downward trend in habitat capability for MIS.

Power lines have also long been implicated in the electrocution of avian species, particularly large birds such as golden eagles. Avian electrocutions can occur when a bird completes an electric circuit by simultaneously touching two energized parts or an energized part and a grounded part of the electrical equipment. The reason birds may complete an electric circuit can be attributed to two interrelated factors: environmental factors and engineering factors (Avian Power Line Interaction Committee 2006). Improperly constructed power lines, especially distribution lines, are one cause of direct mortality for eagle species and can result in

electrocution of birds attempting to utilize these structures for perching and nesting (Harness & Wilson 2001). Electrocution of birds is unlikely from newer constructed transmission lines that use avian-safe practices. Likewise, 120 kV lines do not pose a threat via electrocution due to the distance between the conductor lines and/or ground lines. These spans are greater than 6 feet, which is the average wing span of a golden eagle. No impacts from electrocution hazard are anticipated from construction of the project because NV Energy builds avian safe transmission lines, as well as substations.

Potential for Increased Predation by Raptors

Transmission lines and distribution lines are features that provide perches where perches do not naturally occur. These perch sites may allow for hunting advantages for birds of prey, particularly in habitats devoid of tall features, such as trees or rock outcrops. Habitats lacking natural perches would likely have the most affect from the artificial perches. Within these communities some species may avoid the habitats where the perches occur, or they may sustain predation, but it is not expected to impact enough individuals of one particular species including MIS, or migratory birds to result in population level viability effects. This impact would be considered a negligible to minor long-term impact. However, the potential for increased predation is not expected to reduce a species' existing distribution, or result in a change in a species distribution.

Design Features to Minimize Impacts from Operations and Maintenance

No impacts from electrocution hazard are anticipated from operation of the transmission line because the transmission line and substations will be constructed to be avian-safe. To ensure avian safety, design feature WL 8 requires NV Energy to construct the proposed transmission in conformance with *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006, prepared by the Avian Power Line Interaction Committee* (2006). Applicable design features (**Appendix B**) implemented during construction would also apply to activities associated with the operations and maintenance phase of the project. For example, any access roads created for a maintenance event would be restored and closed with physical barriers in accordance with design features, allowing for the recovery of wildlife habitat. Additional design features would be implemented to minimize or avoid impacts from the presence of the proposed project. With reclamation of disturbances and continued effective implementation of design features, the potential for long-term impacts to wildlife, particularly mule deer, would be minimized and reduced to minor levels during the operations and maintenance phase of the project.

3.9.2.3 Mitchell Alternative

The Mitchell Alternative is approximately 11.7 miles in length and would cross the most NFS land of all alternatives (8.4 miles). Construction of the Mitchell Alternative would disturb or remove approximately 281.7 acres of habitat, including tree removal from approximately 42 acres of forested communities from the transmission line clearance area.

Of all the action alternatives, the Mitchell Alternative would impact the most forested habitat, some of which consists of a varying aged plantation community. The forested habitat within this alternative is predominately younger with little structural diversity (USFS 2011c). Forested

habitat is not likely to support diversity both in species composition or age-class, but may provide transitional habitat for the MIS hairy woodpecker and Williamson's sapsucker. Mule deer and yellow-rumped warblers are known to occur in this habitat. **Table 3.9-4** displays the amount of forested habitats that would be disturbed. Only road widening disturbance and the total amount of forested communities within the transmission line clearance area (i.e., ROW/easement) are presented because the locations of other project features such as new access roads and staging areas are unknown. While forested habitat may be allowed to recover in areas outside of the transmission line clearance area, impacts to forested habitat would be considered long-term in these areas because of the time required for the trees to recover.

Table 3.9-4 Mitchell Alternative Tree Removal in Forested Habitats

CONSTRUCTION ACTIVITY/ DISTURBANCE	CLEARING OF HABITATS WITH TREES (ACRES)[1]	
	NFS LAND	TOTAL
Transmission Line Clearance Area[2]	38.9	41.8
Widening Existing Roads[3]	5.1	5.4
TOTAL	**44.0**	**47.2**

[1] Includes Eastside Pine, Jeffrey Pine, Mixed Conifer-White Fir, Plantation, and Aspen communities.
[2] Transmission line clearance area was assumed to be the 90-foot-wide ROW/easement.
[3] Excluding forested vegetation communities within the transmission line clearance area.

The Mitchell Alternative would impact the most mule deer summer use habitat compared to the other action alternatives. Data from the CDFW and NDOW suggests that much of the habitat is transitional, supporting summer, year-round, and crucial winter habitats. The Mitchell Alternative would not cross winter-spring high use areas. Other habitats that may be impacted from the Mitchell Alternative include habitat for macroinvertebrates and migratory birds associated with riparian habitat surrounding Dog Creek.

As with all of the action alternatives, the majority (78 percent) of the habitats that would be impacted from the Mitchell Alternative are fragmented by existing roads or trails. However, among all alternatives, the Mitchell Alternative has the least amount of fragmented habitat. Habitat relatively free of roads, trails, and other linear features is found in the region of Mitchell Canyon area to south of Dog Creek; roughly between Mitchell Canyon and the existing #102 transmission line (**Figure 3.9-1**). Restoration of roads would allow the recovery of wildlife habitat and minimize the long-term effects from habitat fragmentation. Additionally, approximately 1.1 miles of unauthorized roads on NFS land that would be widened, would be restored to remove the road in its entirety, reducing the amount of habitat fragmentation along the Mitchell Alternative.

Impacts associated with construction and maintenance of the Mitchell Alternative are not expected to have adverse impacts to MIS and other wildlife species beyond minor to negligible levels. Impacts are expected to be similar as those presented for all action alternatives (**Section 3.9.2.2**). This alternative would impact the most acres of forested habitat by converting it to shrub habitat. However, the amount of habitat that may be removed from the Mitchell Alternative is minor in relation to existing available habitat in the project area. Approximately 230.7 acres of habitat loss may be short-term from construction surface disturbance (e.g.,

centerline, wire pulling, pole sites, etc.) and 51 acres of habitat loss may be long-term (forested habitat removal from pole placement, substation expansion, and line clearance).

Direct and indirect impacts range from negligible to minor and with the implementation of design features. Impacts are not anticipated to result in a contribution to a current or predicted downward trend in habitat capability that would reduce existing distribution for any MIS or other wildlife species. Because design features developed for the project would reduce impacts to wildlife to levels that are negligible or minor, mitigation is not recommended.

3.9.2.4 Peavine Alternative

Total length of the Peavine Alternative is 10.3 miles and would cross 7 miles of NFS land. Despite the Peavine Alternative being the shortest alternative, it would require the most miles of new access roads relative to its length. The construction of the Peavine Alternative would disturb or remove approximately 302.1 acres of vegetation, including tree removal from 21.4 acres of forested communities from the transmission line clearance area.

The proposed ROW/easement for the Peavine Alternative contains approximately half as much forested habitat as that of the Mitchell Alternative, but has slightly more diverse habitat types than the Mitchell Alternative. Long-term impacts to forested habitat within the transmission line clearance area would be approximately 20.4 acres less than the Mitchell Alternative. As with all alternatives, shrub habitat is the most abundant, particularly bitterbrush-sagebrush habitat.

Impacts to wildlife from the Peavine Alternative would be expected to be similar as those presented above for all action alternatives (**Section 3.9.2.2**), and would not exceed levels that are minor to negligible. Impacts would be similar to those of the Mitchell Alternative as well, though there would be less potential impacts to forested habitats. As with the Mitchell Alternative, mule deer and yellow-rumped warblers are known to occur within habitats that would be affected. For mule deer seasonal use, the Peavine Alternative is similar to the Mitchell Alternative in mapped habitat, though it offers more year-round habitat than it does summer use habitat. As shown on **Figure 3.9-1**, the Peavine Alternative would affect fewer acres of potential habitat of all alternatives and may be preferable for mule deer given the lack of winter-spring high use habitat.

Short-term habitat loss is estimated at 269.8 acres, and would result from temporary construction features, such as new access roads, pole sites, and staging areas. Long-term habitat loss would impact approximately 36 acres, and include forested habitat lost from pole displacement, expansion of the Bordertown Substation, and the transmission line clearance area. Direct and indirect impacts range from negligible to minor and with the inclusion of design features, impacts are not anticipated to result in a contribution to a current or predicted downward trend in habitat capability that would reduce a species' existing distribution for a MIS or other wildlife species. Because design features developed for the project would reduce impacts to wildlife to levels that are negligible or minor, mitigation is not recommended.

3.9.2.5 Poeville Alternative

The Poeville Alternative is longest alternative but would cross the least amount of NFS land. Construction of the Poeville Alternative would disturb or remove approximately 627.5 acres of

vegetation communities (i.e., habitat types). Approximately 2.9 acres of forested communities would be removed from within the transmission line clearance area.

Impacts are expected to be similar as those presented for all action alternatives (**Section 3.9.3.2**). Construction activities would impact mule deer winter-spring high use habitat, which may result in displacing mule deer from the variable-width corridor. This area is on private land and currently has few established roads. New construction access roads may have minor short-term impacts associated with habitat fragmentation from loss of vegetation communities within the surface disturbance of the road. As described in **Section 3.9.2.2**, a number of design features would be implemented to prevent motorized use or increased accessibility on new access roads, which would essentially avoid any long-term effects of fragmentation as a consequence of new roads. Construction and maintenance of the proposed project is expected to result in negligible to minor short- or long-term direct and indirect impacts to MIS or other wildlife. Construction and maintenance is not expected to cause a downward trend in habitat capability that would reduce a species' existing distribution for a MIS or other wildlife species. Because design features developed for the proposed project would reduce impacts to wildlife to levels that are negligible or minor, mitigation is not recommended.

3.9.2.6 Peavine/Poeville Alternative

The Peavine/Poeville Alternative is nearly 12 miles long and would cross a variety of wildlife habitats. A majority of the Peavine/Poeville Alternative is identical to the Peavine Alternative, but because it transitions to the east, less forested habitat and more fire-affected habitat would be crossed.

Impacts to wildlife from the Peavine/Poeville Alternative would include those common to all action alternatives (see **Section 3.9.2.2**). Impacts associated with construction of the project would bisect mule deer winter-spring high use habitat, which could result in displacing mule deer from the corridor. With successful restoration of construction-related surface disturbance and implementation of design features, impacts would be negligible to minor and short-term. Impacts are similar to mule deer as those described under the Poeville Alternative for wintering mule deer. However, the Peavine/Poeville Alternative is not anticipated to have more than minor adverse short-term or long-term impacts to most wildlife species. The impacts would not be expected to result in a contribution to a current or predicted downward trend in habitat capability that would reduce the existing distribution for a MIS or other wildlife species. Because design features developed for the project would reduce impacts to wildlife to levels that are negligible or minor, mitigation is not recommended.

3.9.2.7 Cumulative Effects

In many parts of the wildlife CIAA, wildlife habitat has been lost or modified due to present actions. The majority of the habitat in the wildlife CIAA has been fragmented by utility lines and existing roads and trails. Fragmented habitats are still functional habitat for wildlife, but are of reduced quality and value than the larger contiguous areas of habitat that existed prior to these actions. Although not an action, wildfire has caused landscape level changes to the composition and condition of the vegetation communities within the CIAA, which in turn, has contributed to the modification or loss of wildlife habitats. While the effects from most of the present actions have generally been adverse, most of the present resource management activities have directly or

indirectly improved habitat quality. In the future, reasonably foreseeable resource management activities would have a neutral or beneficial impact on most wildlife species and habitat quality within the CIAA.

The Loyalton-Truckee Interstate mule deer herd, specifically, the Verdi sub-herd, utilize portions of the wildlife CIAA for movement corridors and Crucial Winter and Winter-Spring High Use habitats. The continuation of some present actions in the future is expected to have an adverse impact on the herd. As described in **Section 3.9.1.1,** NDOW (2011) reported that the overall trend for the Loyalton-Truckee Interstate herd is declining. The agency also reported that the Verdi sub-herd has endured substantial declines largely due to loss of habitat from urban development, wildfires, increased recreation (NDOW 2012b), and direct mortality due to vehicular collisions.

The contribution of the proposed project to cumulative wildlife habitat losses would be minor. The primary impacts from any action alternative consist of the loss, modification, and fragmentation of several hundred acres of wildlife habitat. With the exception of forested habitats, impacts to wildlife habitat would be short-term as habitat will be restored following disturbance. Implementation of design features that promote successful restoration of access roads would ensure that loss and fragmentation of mule deer habitat would also be short-term. The modification to forested habitats within the transmission line clearance area would be long-term, but impacts would also be minor. Forested habitat are abundant in the region and reasonably foreseeable resource management activities would have beneficial long-term effects to forested habitats as they are intended to improve forest health and reduce the potential for large catastrophic wildfires.

3.10 SPECIAL STATUS WILDLIFE

Special status wildlife are species that meet one or more of the following criteria:

- Listed, proposed or candidate for listing under the federal ESA and/or the California Endangered Species Act as threatened, or endangered;
- Designated by the USFS or BLM as sensitive; and
- Designated by NDOW or CDFW as fully protected and/or species of special concern.

The information presented in this section is summarized from *Specialist Report: Special Status Wildlife Bordertown to California 120 kV Transmission Line Project* (USFS 2014e). Information used for this analysis includes specific data collected for this project as well as past survey data collected by the USFS and NDOW. Project specific surveys included:

- Forest dwelling raptors-reconnaissance surveys mainly within NFS land conducted in June 2011;
- Aspen dependent species-focused reconnaissance surveys along the Poeville Alternative conducted in August 2012; and
- Golden Eagle helicopter surveys conducted in June 2012.

Other data sources included consultation or data queries with USFS, NDOW, USFWS, NNHP, and the California Natural Diversity Database (CNDDB).

Regulatory Framework

Biological resources in the project area are protected and/or regulated by a variety of federal and state laws and policies. The regulatory framework is described in *Specialist Report: Special Status Wildlife Bordertown to California 120 kV Transmission Line Project* (USFS 2014e). Key regulatory mechanisms applicable to the proposed project are discussed below.

Federal Endangered Species Act

Under the ESA, the USFWS determines if a species should be listed under the ESA, and whether these species should be listed as candidate, proposed, threatened, or endangered. Endangered means a species that is in danger of extinction throughout all or a significant portion of its range. Threatened species are likely to become endangered in the foreseeable future. The USFWS also maintains a listing of species or subspecies (i.e., taxa) that may warrant listing as threatened or endangered and for which the USFWS has sufficient biological information to support a rule to list as threatened or endangered. These species are referred to as candidate species. Proposed species are species (taxa) for which the USFWS has published a proposal to list as threatened or endangered in the Federal Register.

Humboldt-Toiyabe National Forest

The Forest Plan (1986) outlines the management direction of NFS land. The regulations require that the USFS maintain viable populations of all vertebrate wildlife and fish species native to the NFS land and manage for conservation of particular species. USFS sensitive species are plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by:

- Significant current or predicted downward trends in population numbers or density; and
- Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution (FSM 2670.5).

The SNFPA amended the Forest Plan in 2001 and again in 2004 (USFS 2004). The SNFPA is designed to facilitate a regionally-consistent management of old forest ecosystem resources across USFS management boundaries and as such is called "framework" (e.g., Sierra Nevada Framework). The umbrella management also applies to other sensitive resources such as aquatic, meadow, and riparian ecosystems. The goals of the plan as they relate to wildlife resources include:

- Improve quantity and quality of useable habitat available for SNFPA species by increasing density of large trees, increase structural diversity of vegetation, and improve the continuity and distribution of old forests across the landscape; and
- Protect and restore desired conditions of aquatic, riparian, and meadow ecosystems in Sierra Nevada national forests.

Bureau of Land Management

The Eagle Lake Field Office administers portions of land within the project area. The Eagle Lake RMP (BLM 2008b) outlines BLM sensitive species. The BLM Manual 6840.06 E (2008a) states

that native species may be listed as sensitive if they meet certain criteria. The BLM affords these sensitive species the same level of protection as federal candidate species. The BLM's policy for sensitive species is to avoid authorizing actions that would contribute to the listing of a species as threatened or endangered.

California Endangered Species Act

Pursuant to the California Endangered Species Act, a permit from the CDFW is required for projects that could result in take of a plant or animal species that is state-listed as threatened or endangered. The California Endangered Species Act defines "take" as an activity that would directly or indirectly kill an individual of a species. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2080.1 consistency determination or a Section 2081 incidental take permit.

California Fish and Game Code -Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take of fully protected species. The CDFW has informed nonfederal agencies and private parties that their actions must avoid take of any fully protected species.

California Species of Special Concern

The CDFW maintains a list of species that may be experiencing or formerly experienced population declines or range retractions that may lead to the species qualifying for California Endangered Species Act protection, or had naturally small populations exhibiting high susceptibility to risk from facts that could lead to declines qualifying the species for protection under the California Endangered Species Act. Species under this designation are not afforded legal protection.

State of Nevada Sensitive Species

The NDOW maintains a list of species thought to occur in limited numbers, limited distribution, or may be vulnerable to climatic or landscape scale changes. These are listed as both sensitive species by NRS 501.331 or within the Wildlife Action Plan (NDOW 2013b) as Species of Conservation Priority. Some of these species area listed as sensitive by the BLM, USFWS or as a conservation priority bird species. Species under this designation are not afforded legal protection.

3.10.1 Affected Environment

Table 3.10-1 presents the special status wildlife with the potential to occur in the analysis area based on a review of species habitat requirements, vegetation maps, and interviews with state and federal biologists. Species that did not have the potential to occur are species that have a known range that do not overlap the region; have no potentially suitable habitat within at least 20 miles of the project area; or have significant barriers between known habitat and the project area (e.g., bighorn sheep).

Table 3.10-1 Potential Special Status Wildlife Species within the Analysis Area

SPECIAL STATUS WILDLIFE	STATUS[1]	HABITAT	POTENTIAL FOR OCCURANCE[2]
Pygmy rabbit Brachylagus idahoensis	SS	Restricted to big sagebrush habitats with friable soils suitable for digging burrows; generally in valley bottoms.	Unlikely to occur; area lacks stands of dense big sagebrush and friable soils. Not known to occur in the project area.
American badger *Taxidea taxus*	SSC	Semi and arid shrubland or grassland with friable soils for digging burrows. Forages on pocket gophers, ground squirrels among others.	Likely to occur; potentially suitable habitat exists along all alternatives.
Spotted bat *Euderma maculatum*	SS, SSC	Roosts on cliffs ranging in habitats from high elevation to deserts. Foraging habitat are areas with moth abundance.	Could occur; documented along the Truckee River in Nevada and at Smithneck Creek northwest of the project area (Bradley et al. 2006; CNDDB 2013). Foraging habitat occurs, some roosting habitat occurs where rock outcrops exist.
North American wolverine *Gulo gulo*	SS, FP	Habitat includes mixed conifer, red fir, and lodgepole habitats. Large home range.	Unlikely to occur; historic sightings of wolverine are west of the project area and one recent sighting was west of Highway 89 in California, 15 miles west. Project area likely does not provide adequate undisturbed range (CDFW 2005b).
Townsend's big-eared bat *Corynorhinus townsendii townsendii*	SS, BS, SSC	Highly associated with caves and mines. Found primarily in rural settings from deserts to lower, mid to high-elevation mixed coniferous-deciduous forest and has also been reported to utilize buildings, bridges, rock crevices and hollow trees as roost sites (Western Bat Working Group 2005).	Could occur; known to occur in the Truckee River Canyon and around Peavine (Bradley et al. 2006; Western Bat Working Group 2005; Brown and Berry 2002). Suitable habitat exists where rock outcrops or abandoned mine workings occur nearest the Poeville Alternative.
Frindged myotis *Myotis thysanodes*	BS	Variety of habitats, generally lower elevation. Found roosting in trees, caves, buildings and mines. Forages on small beetles.	Could occur; documented west of the project area in California over eight miles west (CNDDB 2013).
Sierra Nevada red fox *Vulpes vulpes necator*	SS, SNF	Habitat of high elevation barren, conifer, and shrub habitats; montane meadows; subalpine woodlands and fell-fields.	Unlikely to occur; suitable habitat is not present in project area (Perrine, Campbell, & Green 2010). Historic sighitings 15 miles west of the project area (CNDDB 2013) near Dog Valley/Henness Pass Road.

SPECIAL STATUS WILDLIFE	STATUS[1]	HABITAT	POTENTIAL FOR OCCURANCE[2]
Pallid bat *Antrozous pallidus*	BS	Found in a variety of habitats from low elevation coniferous forest, woodlands to sagebrush. Forages on large ground dwelling insects but also moths.	Could occur; not documented near the project area in Nevada, but has been detected in California about eight miles west (CNDDB 2013).
Dark-nosed small-footed myotis *Myotis melanorhinus*	BS, SSC	Habitat includes a variety of vegetation communities, roosts in caves, mines, and trees. Forages in open areas.	Could occur; documented occuring near the Peavine area (Bradley et al. 2006). Both roosting and foraging habitat occurs in the project area.
Yuma myotis *Myotis yumanensis*	BS	Habitat includes all landscapes including human built ones, roosts in outcrops, caves or buildings, forages primarily on emergent aquatic insects.	Could occur; documented near the Truckee River (Bradley et al. 2006). Roosting and foraging habitat occur, though likely near water sources.
Sierra Nevada snowshoe hare *Lepus americanus tahoensis*	SSC	Inhabits mid-elevation riparian brush or young conifer thickets.	Could occur; potentially sitable habitat occurs within the western portion of the project area.
Northern goshawk *Accipiter gentilis*	MIS, SS, SNF, SSC, BS	Generally nests within late-seral stage montane forest; in Nevada commonly nests in aspen.	Could occur; small, isolated patches of marginally suitable nesting habitat occurs along some of the action alternatives. NDOW documented species at location west of the Mitchell/Peavine Alternatives (NDOW 2012a). A USFS-designated goshawk Protected Activity Center (PAC) is 4 miles west of the project area. Goshawks may use portions of the project area for foraging.
Golden eagle *Aquila chrysaetos*	BGE, BS, FP	Nests on rocky scarps with large expanses of hunting territory. Also nests in conifers when rocks are unavailable.	Known to occur; observed during 2012 surveys, occupied nest is within four miles of project area. Two NDOW-known locations are within 10 miles of project area. Additionally, sightings of nesting golden eagles in conifers have been observed on the slopes of Peavine and within the Carson Range (JBR 2013a).
Bald eagle *Haliaeetus leucocephalus*	SS, BGE, FP, BS, CE	Nests in large trees or snags near large bodies of water.	Unlikely to occur; no suitable habiat for nesting within the project area. Foraging habitat within the Truckee River. Documented at Stampede Reservoir over five miles southwest of the project area (CNDDB 2013).

SPECIAL STATUS WILDLIFE	STATUS[1]	HABITAT	POTENTIAL FOR OCCURANCE[2]
Northern Harrier *Circus cyaneus*	SSC	Wide-ranging breeders in Nevada and northeastern California. Forages and nests within open habitats such as meadows and grasslands	Known to occur; documented during golden eagle surveys and during breeding birds surveys in Nevada (Floyd et al. 2007), known to breed throughout northeastern California (Shuford 2008).
Mountain quail *Oreortyx pictus*	SS	Montane shrub and riparian habitat with *Ceonothus* near water sources.	Known to occur; potential habitat occurs throughout the project area, particularly where montane shrubs are present (Floyd et al. 2007).
Swainson's hawk *Buteo swainsoni*	SSC, BS, CT	Common habitat includes agricultural lands with open foraging habitat, and tall trees for nesting.	Could occur; limited suitable habitat occurs near the Bordertown Substation, where large trees associated with ranches provide nesting opportunities. Reported as occuring in the general area by NDOW (2012a).
Burrowing owl *Athene cunicularia*	SSC, BS	This small owl nests and roosts within burrows, commonly excavated by fossorial mammals. Habitat is found within open grasslands, or other areas of open areas with sparse vegetation, whether natural or altered.	Could occur; potentially suitable habitat occurs in fire affected habitats on Peavine, as well as within the northern portions of the project area, such as near the Bordertown Substation.
Long-eared owl *Asio otus*	SSC	Generally found within riparian, conifer or other woodland habitats which are open or adjacent to meadows and shurblands. Nest in old corvid or hawk nests in trees or on cliff faces.	Could occur; potentially suitable habitat occurs along the western portions of the project area (Truckee River and other riparian). NDOW records indicate these owls have been documented in the area (NDOW 2012a).
California spotted owl *Strix occidentalis occidentalis*	SS, SNF, BS, SSC	Occurs in dense, old-growth, multi-layered mixed conifer forest.	Unlikely to occur; not known to occur in the project area, suitable habitat is absent. Documented approxmately 10 miles west of the project area (CNDDB 2013).
Flammulated owl *Psiloscops flammeolus (*syn *Otus flammeolus)*	SS	Open coniferous forests, nest in dead trees with existing woodpecker holes.	Could occur; marginally suitable habitat occurs within the aspen and/or older conifer stands along the western portion of the project area. Known to nest in and near goshawk PAC (Personal communication M. Easton 2014).

SPECIAL STATUS WILDLIFE	STATUS[1]	HABITAT	POTENTIAL FOR OCCURANCE[2]
White-headed woodpecker *Picoides albolarvatus*	SS	Mixed conifer forests, with a diveristy of pine species (for seed consumpiton) and mixed ages, generally nest in dead standing trees.	Known to occur; potentially suitable habitat occurs in patches throughout the project area. Species documented near or within the area during the Nevada Breeding Bird Atlas project (Floyd et al. 2007) and in California along the Mitchell Alternative during USFS reconniassance surveys.
Sierra Nevada willow flycatcher *Empidonax traillii brewsterii*	SNF	Large, dense willow and riparain habiat along meadows and open water.	Unlikely to occur; willow stands lack density, size and structural diversity. Closest known location is over six miles west along Worn Mill Canyon near Stampede Reservoir (CNDDB 2013).
Yellow warbler *Setophaga petechia* (syn. *Dendroica petechia*)	MIS, SSC	Occur along streams or in bushy thickets and willows; sometimes found in montane chaparral; wide ranging.	Could occur; potentially suitable habitat present along vegetated drainages within the project area. Yellow warblers have been recorded near the Truckee River (Floyd et al. 2007; USFS 2011c).
Olive-sided flycatcher *Contopus cooperi*	SSC	These flycatchers are mostly associated with edges, openings, and natural and human-created clearings in otherwise relatively dense forests, but they also occupy semiopen forests.	Likely to occur; suitable habitat occurs where forest habitats are adjacent to roads, meadows or other openings. Have been documented in the Carson Range (Floyd et al. 2007) and during USFS surveys west of the project area (USFS 2012b).
Loggerhead shrike *Lanius ludovicianus*	SSC, BS	Open arid shrublands, woodlands, mountain mahogany, with a few perches/lookouts.	Known to occur; documented during the breeding bird surveys in Nevada on Peavine Mountain. (Floyd et al. 2007)
Northern sagebrush lizard *Sceloporus graciosus graciosus*	BS	Sagebrush habitats.	Likely to occur; suitable habitat occurs along nearly all alternatives.

SPECIAL STATUS WILDLIFE	STATUS[1]	HABITAT	POTENTIAL FOR OCCURANCE[2]
Sierra Nevada yellow-legged frog *Rana sierrae*	E, SS	At lower elevations, breeds in low gradient perennial streams, higher elevations in large waterbodies (those that do not freeze to the bottom in winter).	Unlikely to occur; outside known range. Known to occur approximately 13 miles west of the project area (CNDDB 2013) and in Nevada within the Lake Tahoe Basin (CDFW 2011). No known historic distribution with the project area.
Lahontan cutthroat trout *Oncorhynchus clarkii henshawi*	T, MIS	Perennial streams and waterbodies on the east side of the northern Sierra Nevada Mountains.	Known to occur; LCT are known to be present in Dog Creek. Dog Creek drains to the Truckee River which is also occupied by LCT.

[1]Status designation

USFWS ESA
E - Endangered
T - Threatened
C - Candidate proposed for listing

Humboldt-Toiyabe National Forest
SS - USFS Region 4 Sensitive Species, Carson District
MIS - USFS Toiyabe Management Indicator Species
SNF - Sierra Nevada Framework Focal Species
BGE - Bald and Golden Eagle Protection Act (USFWS)

Bureau of Land Management
BS - Sensitive Species

State of California: California Endangered Species Act
CT – Threatened
CE - Endangered

California Department of Wildlife
SSC - Species of Special Concern
FP - Fully protected

[2] Potential for occurrence definitions

Unlikely to occur: Potentially suitable habitat is present, but species unlikely to be present in the project area because of current status of the species and very restricted distribution.
Could occur: Suitable habitat is available in the project area; however, there are few or no other indicators that the species might be present.
Likely to occur: Habitat conditions, behavior of the species, known occurrences in the project vicinity, or other factors indicate a relatively high likelihood that the species would occur in the project area.
Known to occur: The species, or evidence of its presence, was observed in the project area during surveys or was reported by others.

Source: NNHP 2012; NDOW 2012a; CNDDB 2013 and other sources as cited.

3.10.1.1 Species Accounts

Federally-Listed Threatened, Endangered, or Proposed Species

Lahontan Cutthroat Trout

The LCT was listed as an endangered species in 1970. In 1975, the LCT was reclassified as threatened to facilitate management and to allow for regulated angling. In 1995, USFWS released its recovery plan for LCT, encompassing six river basins within LCT historic range, including the Truckee River basin. Critical habitat has not been designated for LCT.

LCT were once the only trout (with one exception) found on the east side of the Sierra Nevada, residing in a variety of cold water, from large terminal desert lakes to small mountain lakes, from major rivers to small headwater creeks (Moyle 2002). Historically, LCT were endemic to the physiographic Lahontan basin of northern Nevada, eastern California, and southern Oregon (USFWS 1995). Today, the current distribution is a fraction of the historic range. Some of the formerly occupied streams or lakes have had reintroductions of LCT.

As part of the restoration effort for LCT, various streams have been identified within the Truckee River Basin as having existing populations of LCT or as potential reintroduction sites (USFWS 1995). Recovery objectives associated with these sites include maintaining and improving the hydrology, water quality, and fish passageways of the Truckee River Basin and its tributaries. Two perennial creeks, Dog Creek and Sunrise Creek, flow into the Truckee River where LCT are known to occur. Although listed as an unoccupied waterway in the 1995 Recovery Plan, LCT have been observed in Dog Creek in recent years (Mellison 2013). Threats to LCT include habitat loss, livestock grazing, urban development, mining, water diversion, poor water quality, and hybridization and competition with non-native salmonids (USFWS 1995).

Forest Service Sensitive Species

Mammals

The project area contains potential habitat for the Townsend's big-eared bat and the spotted bat. However, habitat potential is considered marginal within most of the alternatives due to the lack of caves or cave-like structures. Limited roosting occurs along the Poeville and Peavine/Poeville Alternatives where rock outcrops and abandoned mine workings occur. The Peavine Alternative has some rock outcrops (USFS 2011c). Townsend's big-eared bats are known to occur in mine shafts on the slopes of Peavine Peak (Brown & Berry 2002). Nearly all bat species have the potential to occur within the project area, particularly within foraging habitat provided by the Truckee River and riparian areas.

Spotted Bat

Spotted bats are known from only a half-dozen sites in Nevada (Bradley et al. 2006). They occupy a large range throughout central western North America from southern British Columbia to northern Mexico (Bat Conservation International 2012). They are found in a wide variety of habitats from low elevation desert scrub to high elevation coniferous forest habitats, including sagebrush and riparian habitats. They are closely associated with rocky cliffs and are thought to roost alone. These bats are capable of flying a long distance for foraging, which includes a

variety of insects. Foraging habitat are meadows, open coniferous woodland, and forest edges (Bradley et al. 2006). Spotted bat detections within the general area of the project are: in California at Smith Neck Creek (CNDDB 2013), over 15 miles to the northwest; and east Reno, likely near the Truckee River (Bradley et al. 2006). The Peavine Alternative crosses a basalt outcrop, which may provide roosting habitat. The remainder of the project area provides little suitable roosting habitat for this bat, but it does provide foraging habitat.

Townsend's Big-Eared Bat

Townsend's big-eared bats are found throughout western North America ranging from low desert to high mountain habitats. Distribution is strongly correlated with the availability of caves and abandoned mines. This year-round resident bat is found primarily in rural settings from deserts to lower, mid- to high-elevation mixed coniferous-deciduous forest. These bats were not surveyed for within the project area; but they have been detected within the southwestern (Bradley et al. 2006) and eastern (Brown & Berry 2002) portions of the project area.

Townsend's big-eared bats are moth specialists. Foraging occurs near vegetation and other surfaces and prey is probably gleaned from these surfaces. The project area provides foraging habitat throughout and suitable roosting habitat occurs in the project area within outcrops and abandoned mine workings, which occur across the slopes of Peavine Peak. Some of these workings are in close proximity to the Poeville and Peavine Alternatives. Townsend's big-eared bats roost together in relatively small colonies ranging from 15 to 150 individuals depending on the roost site (Bradley et al. 2006). A study of selected adits and shafts on the slopes of Peavine Peak within NFS land, revealed three adits with individual Townsend's big-eared bats (Brown & Berry 2002).

Birds

Sensitive bird species with the potential to occur or are known to occur within the project area are: Northern goshawk; mountain quail; flammulated owl; and white-headed woodpecker.

Northern Goshawk

Northern goshawks are typically associated with late seral or old growth forests, characterized by contiguous stands of large trees and large snags with closed canopies and relatively open understory (Reynolds et al. 1992). On the Carson District, known goshawk nest sites are found in large aspens and conifers with an approximate average canopy cover of 55 to 78 percent (unpublished field data, on file at Carson Ranger District). Within the Sierra Nevada, northern goshawk nesting territories occur in elevations ranging from 2,500 feet AMSL in ponderosa pine habitat through 10,000 feet AMSL in red fir and lodgepole pine habitat or within eastside pine forests. Foraging habitat use probably varies seasonally in response to prey availability. Results from some studies suggest goshawks forage in all forest types, but appear to select forests with a high number of large trees, greater canopy cover with a high basal area, and relatively open understories in which to hunt (Beier & Drennan 1997).

The major threats to goshawks include loss of critical nesting and foraging habitat from land management practices (i.e. vegetation management such as fuels reduction, livestock grazing,

etc.), natural events such as fire or wind storms, (Reynolds et al. 1992) and human disturbance (Squires & Kennedy 2006), particularly during breeding season.

Goshawks have not been recorded nesting within the project area. In the general Dog Valley area, goshawks have been known to nest in two locations. One of these locations is within a USFS-designated northern goshawk PAC. It is located approximately four miles west of the Mitchell and Peavine Alternatives, but it has not been active since 2004. Annual USFS surveys are conducted throughout the area and there have been no detections since that time.

Within the project area, pockets of potentially suitable habitat occur along portions of each of the action alternatives. However, these pockets are small in size, isolated, and not likely suitable for goshawks.

Mountain Quail

Mountain quail use a variety of habitat types for nesting such as old growth coniferous forest, mixed montane shrub, regenerating clearcuts, and old burned areas (Gutiérrez & Delehanty 1999). In the Sierra Nevada, mountain quail are found nesting and foraging predominantly in montane chaparral habitat composed of chinquapin, snowbrush, and greenleaf manzanita (Gutiérrez & Delehanty 1999) where they feed on seeds, fruit, and insects.

Nests are often concealed under logs or fallen pine branches, in weeds, shrubs, or at the base of large trees. Mountain quail usually nest within a few hundred yards of water to provide chicks with required water supply after hatching (Gutiérrez & Delehanty 1999).

Mountain quail are known to occur throughout the Carson District. Suitable habitat is present for mountain quail in the project area particularly in areas where montane chaparral is present. Incidental sightings of mountain quail have been detected in the Long Valley area near the northern goshawk PAC (USFS 2011d) and were documented in or near the project area during surveys for the Nevada Breeding Bird Atlas (Floyd et al. 2007).

Flammulated Owl

Flammulated owls nest in a variety of open coniferous forests between 6,000 and 10,000 feet AMSL. Flammulated owls prefer older forests and are often found in association with old growth yellow pine forests mixed with red fir, white fir, and incense cedar (McCallum 1994). In Nevada, flammulated owls have been found nesting within aspens (GBBO 2010) and will occupy stands as small as 125 acres (Dunham et al. 1996). Flammulated owls are secondary cavity nesters and prefer cavities excavated by northern flickers and pileated woodpeckers (Arsenault et al. 2002). Older forests tend to have a higher abundance of snags and live trees with suitable nesting cavities; however, critical to foraging and roosting is a mosaic of habitats. Foraging habitat is generally a well developed but more open understory and forest/grassland edge habitats (McCallum 1994). These owls forage almost exclusively on insects and other arthropods, mostly moths, beetles, and grasshoppers.

Flammulated owls have been documented on the Carson Ranger District and most recently were detected within aspen and mixed conifers stands in the Long Valley area (Easton 2013). Habitat requirements for flammulated owls are similar to those of the northern goshawk. Limited habitat

for these owls occurs in areas of older stands of conifer as well as aspen stands that occur in small patches along some of the action alternatives.

White-Headed Woodpecker

White-headed woodpeckers occur from southern British Columbia, north central Washington, northern Idaho south through Oregon, east of the Cascades, to southern California and west-central Nevada (Garrett et al. 1996). They are known in Nevada from the Carson Range within the Carson Ranger District and Tahoe Basin (GBBO 2010). White-headed woodpeckers are year-round residents and generally are found at elevations between 4,000 and 9,000 feet AMSL in ponderosa pine or Jeffrey pine (eastside) and mixed conifer habitat type (Garrett et al. 1996). Preferred habitat appears to be multi-storied, multi-species forest with large diameter trees, numerous snags and 50 to 70 percent canopy cover (GBBO 2010). However, white-headed woodpeckers are also found in open-canopied conifer stands with nest sites often occurring in relatively open habitat or along forest edges (Garrett et al. 1996).

A pair of white-headed woodpeckers was noted along the Mitchell Alternative in 2011 and was likely nesting within the area (USFS 2011c). Habitat requirements for white-headed woodpeckers somewhat overlap with the northern goshawk and flammulated owl, although white-headed woodpeckers tend to tolerate more open habitat conditions compared to the other two species. Potentially suitable habitat occurs in areas of older mixed conifer and aspen stands, as well as open larger diameter conifers.

BLM Sensitive Species

Mammals

A number of mammal species are listed by the BLM Eagle Lake Field Office as sensitive. The BLM indicated that six species of BLM sensitive bats could occur in the project area: long-eared myotis, frindged myotis, pallid bat, dark-nosed small-footed myotis, Yuma myotis, and Townsend's big-eared bat (described above). For nearly all species of bats, the most common habitat is foraging habitats associated with riparian or wet areas. Four species of bats can be found roosting in trees: long-eared myotis, pallid bat, small-footed myotis, and fringed myotis. All have the potential to be found roosting in rock outcrops, caves, or mines, which are limited within the action alternatives.

Long-eared Myotis

Primarily a bat of forests, where older trees provide roosting sites beneath bark or within cavities, occasionally uses crevices in cliffs and buildings This is one of the most wide ranging bats, occurring from Alaska to Mexico (Bat Conservation International 2012; Bradley et al. 2006). Usually from maternity colonies of up to 200 females. Hibernates in winter; active with onset of warm weather, spring to fall.

Fringed Myotis

Fringed myotis appear to be most common within oak and pinyon-juniper habitats (Bradley et al. 2006), but may occur conifer forest, scrub, and sagebrush. Believed to hibernate in winter

becoming active with onset of warm weather. Report to forage primarily on beetles and moths, though non-flying insects have been documented.

Pallid Bat

The pallid bat inhabits low desert shrubland, juniper woodlands, and grasslands. Pallid bats most commonly occur in low, dry regions with rock outcrops, usually near water, and roost in rock crevices, buildings, rock piles, tree cavities, shallow caves, and abandoned mines (NatureServe 2012; Bradley et al. 2006). Their primary food sources are arthropods such as crickets, grasshoppers, beetles, scorpions, and spiders.

Dark-nosed (Western) Small-footed Myotis

The taxon has been split; leaving the species in Nevada and California as the small-footed dark-nosed myotis, Myotis *melanorhinus* (Bat Conservation International 2012). This species of bat occurs west of the Rockies in varied habitats, most common in pinyon-juniper communities (Bogen, Valdez, & Navo 1998).

Yuma Myotis

The Yuma myotis inhabits riparian areas, scrublands, deserts, and forests and is commonly found roosting in bridges, buildings, cliff crevices, caves, mines, and trees. Its primary diet is emergent aquatic insects such as caddis flies, midges, and small moths and beetles (Bradley et al. 2006). Believed to be migratory in Nevada; most active in Nevada with warm weather, spring to fall.

Birds

Golden Eagle

Golden eagles inhabit wide open terrain, both agricultural and shrub covered with suitable nest features. Generally rock outcrops, crags, and cliffs are selected as nesting substrate and occasionally conifers. Nest sites are normally located with expansive views of their home range territory, which is generally large. Like other long-lived species, golden eagles have a low reproductive rate, with their productivity linked to prey abundance and seasonal weather. Their primary prey base are rabbits and hares, especially black-tailed hares (jack rabbits) (Kochert et al. 2002). Golden eagles are not a forest species and are uncommon within them. However, where forests provide a suitable nesting substrate adjacent to suitable foraging habitat, golden eagles can occur (Ryser 1995). The project area provides roosting, foraging, and nesting habitat for golden eagles. Two golden eagle nests were located during surveys; both are over three miles from any action alternative (JBR 2013a). A pair of golden eagles were seen in 2012 soaring over the Poeville Alternative as well.

Swainson's Hawk

Swainson's hawks are strongly associated with large nest trees such as cottonwoods, oaks or others adjacent to grassland or agricultural lands (Floyd et al. 2007). They are long-distance migrants and nest later than most raptors. They prefer tall trees adjacent to foraging habitat. In western Nevada, they are generally found near ranches with trees. Over most of the species' range, breeding Swainson's hawks show a strong dependence on ground squirrels, voles, or other

abundant small mammal prey. Territory density appears to be positively associated with the availability of specific regional prey such as ground squirrels and voles. Following the breeding season, this species shifts from foraging on small mammals to insects (e.g., grasshoppers and crickets) (Woodbridge 1998). The project area provides little nesting habitat for these hawks, but they could occur during migration or during dispersal.

Burrowing Owl

Burrowing owls require open habitat with existing burrows dug by ground squirrels, kit fox, or other fossorial mammals usually in open areas with good surrounding visibility. Burrowing owls are present in northern Nevada in the spring and summer months and winter in the southwestern states (Poulin et al. 2011). Habitat is extremely limited along the action alternatives, with potentially suitable habitat available within the Long Valley grassland and open habitats and in burned areas around the Bordertown Substation.

Loggerhead Shrike

Loggerhead shrikes are commonly found in arid open country and shrublands with higher perches suitable for searching for prey. They occur where shrubby but open habitat is suitable, on the Poeville and Peavine Alternatives. They are widely dispersed across Nevada, but are less so across California (Floyd et al. 2006; Reuven 1996).

Other Species

Sagebrush Lizard

In California, this subspecies occurs in the Great Basin desert east of the Sierra Nevada and in the northeast corner of the state. It ranges north into eastern Washington and east into southern Idaho, Montana, Wyoming, Nebraska, Utah, Colorado, Arizona, and New Mexico. In Nevada it is wide ranging within sagebrush habitats. Found in sagebrush and other types of shrublands, mainly in the mountains (at higher elevations than the western fence lizard). Prefers open areas with scattered low bushes and lots of sun (Stebbins & McGinnis 2012). All action alternatives have some potentially suitable habitat.

California Species of Special Concern

Mammals

Sierra Nevada Snowshoe Hare

This subspecies of snowshoe hare occurs in the mid- to higher elevations of the Sierra Nevada from Mount Lassen to Mono County in California. In Nevada they have been documented in the Lake Tahoe region (Hall 1995; Collins 1998). They prefer riparian habitats with thick brush with downed logs and access to conifer branches for browsing during the winter months when other browse is buried under snow (Collins 1998). Limited habitat for this species occurs within the project area.

American Badger

American badgers are large members of the weasel family and are powerful diggers for construction of dens or the acquisition of prey (e.g., ground squirrels). They prefer open grasslands, open shrub habitats or treeless habitats with friable soil and suitable prey (Jameson & Peeters 1988). In the project area they could occur outside forested habitats, particularly on the slopes of Peavine Mountain or within the Bordertown area.

Birds

Northern Harrier

Widely distributed across treeless landscapes, generally seen gliding above foraging habitat in search of voles, mice, and other prey sources. Commonly found nesting within wetlands, marshes or riparian areas where vegetation can conceal nests. Species nests on the ground, usually in dense vegetation (MacWhirther & Bildstein 1996). Known to occur within the project area.

Long-eared Owl

These owls are strongly associated with riparian woodlands with dense vegetation; however foraging habitat is almost exclusively open terrain. Primary prey are voles or other nocturnal rodents. They typically nest in trees utilizing a previously built nest, occasionally nests within cavities of trees or rock outcrops (Marks et al. 1994). In California, they have limited distribution; costal locates occurring in the Sierra Nevada and east.

Yellow Warbler

Found almost exclusively in riparian habitat, notably those with dense willow thickets; a common victim of nest parasitism by brown-headed cowbirds. Yellow warblers breed in the Sierra Nevada and Great Basin in areas that support willows or other dense riparian habitat (Floyd et al. 2007). They are summer residents on the Carson Ranger District. Yellow warblers were noted during the Nevada Bird Atlas breeding bird surveys within a portion of the project area (near Verdi) (Floyd et al. 2007) and during migratory bird surveys for a project in Dog Valley. Yellow warblers are closely tied to riparian habitats that contain willow, alder, and elderberry components for nesting. However, non-breeders (migrants) may be found in mixed conifer habitat associated with riparian areas or conifer stands that contain substantial amounts of brush (Lowther et al. 1999). Portions of the project area contain riparian vegetation potentially suitable for yellow warblers such as willow, alder, and bitter cherry; however, the riparian habitat is likely too small and too open to support breeding habitat.

Olive-Sided Flycatcher

A bird of conifer forests, nesting along forest edges and openings both natural and human made. Nesting territories are large and strongly defended. Territories generally have a large tree (tall) or snag from which the flycatchers sing or catch flying insects (Altman & Sallabanks 2012). Olive-sided flycatchers were noted during nesting bird surveys west of the project area near Dog Valley (USFS 2012b) and have been documented in the Carson Range (Floyd et al. 2007).

3.10.1.2 Mitchell Alternative

Table 3.10-2 presents the habitats within the ROW and the special status species that may occur within or adjacent to the Mitchell Alternative. Among all alternatives, the Mitchell Alternative has the least amount of fragmented habitat from roughly Mitchell Canyon area to south of Dog Creek. The Mitchell Alternative has the most conifer habitat (e.g. mixed conifer, eastside pine, and Jeffery pine communities) available as potential habitat for special status species. Based on field surveys, the conifer habitat likely does not support enough diversity both in species composition or age-class for some of the special status bird species. However, these habitats could provide transitional habitat for flammulated owl and foraging habitat for northern goshawk where aspen stands and conifer forests intermix or where roads provide corridors through dense forests. This alternative is four miles east of a northern goshawk PAC. Riparian habitat surrounding Dog Creek may provide habitat for yellow warblers, but it is likely that the habitat patch size is too small or not diverse enough for nesting. This habitat also may provide foraging opportunities for bat species, although roosting habitat was not identified during the reconnaissance surveys. LCT are known to occur within Dog Creek as well.

Most of the special status species that could occur within the project area would be incidental or occur as a result of dispersal. The Mitchell Alternative has suitable mountain quail nesting habitat and golden eagle forging habitat. Potential habitat for the northern sagebrush lizard, American badger, loggerhead shrike, burrowing owl, northern harrier, and olive-sided flycatcher occurs in patches.

3.10.1.3 Peavine Alternative

Table 3.10-2 presents the habitats within the ROW and the special status species that may occur within or adjacent to the Peavine Alternative. Habitat components and potential species are similar to those presented under the Mitchell Alternative; however, the alternative is shorter. The Peavine Alternative has the second most conifer habitat as potential habitat for special status species. The conifer habitats are unlikely to support nesting habitat for most sensitive bird species (e.g., flammulated owl, northern goshawk, olive-sided flycatcher), but could support dispersal habitat or incidental occurrences.

Given the habitats bisected by the Peavine Alternative are similar to those of the Mitchell Alternative, the same special status species could also occur as described in **Section 3.10.2.2**.

3.10.1.4 Poeville Alternative

Table 3.10-2 presents the habitats within the ROW and the special status species that may occur within or adjacent to the Poeville Alternative. Habitat crossed by the Poeville Alternative is diverse and includes all habitats described in **Table 3.9-2**. However, the alternative crosses the least amount of conifer habitat. The Poeville Alternative provides potential habitat for Townsend's big-eared, fringed myotis, and dark-nosed small-footed myotis bats on private land where mine workings occur. Habitat may also be present for mountain quail, northern harrier, American badger, long-eared owl, loggerhead shrike, northern and sagebrush lizard. On private land, three perennial streams are crossed; Bull Ranch Creek, Jones Creek, and the Truckee River. The Truckee River supports LCT and foraging habitat for bat species and could provide habitat

for the long-eared owl. Golden eagles are expected to occasionally forage within the brush and open habitats of this alternative.

Many of the other special status species that could occur along this alternative would likely be incidental species such as the white-headed woodpecker, northern goshawk, yellow-warbler, and other bat species.

3.10.1.5 Peavine/Poeville Alternative

Table 3.10-2 presents the habitats within the ROW and the special status species that may occur within or adjacent to the Peavine/Poeville Alternative. This alternative has habitats of both the Peavine and Poeville Alternatives, though it likely has fewer habitats for roosting bats and fewer habitats for conifer-dependant species. However, the Truckee River provides foraging habitat for bat species, as well as potential habitat for long-eared owl and habitat for LCT. Other species such as American badger, mountain quail, golden eagle, loggerhead shrike, and sagebrush lizard could occur. As with the Poeville Alternative, other special status species that could occur along this alternative would likely occur as incidentals.

Table 3.10-2 Acres of Special Status Species Wildlife Habitats within the ROW of each Action Alternative

SPECIES ANALYZED	VEGETATION /HABITAT	MITCHELL		PEAVINE		POEVILLE		PEAVINE/POEVILLE	
		USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE
Northern goshawk, Flammulated owl, White-headed woodpecker, Olive-sided flycatcher	Mixed Conifer Eastside Pine Jeffrey Pine	26.7	2.9	14.7	3.0	0	1.7	8.0	2.2
Yellow warbler, Northern goshawk, Flammulated owl, Snowshoe hare, Northern harrier	Willow-Willow Scrub (Riparian)	0	0.2	0	0.2	0.3	1.4	0.1	1.4
Yellow warbler, Northern goshawk, Flammulated owl, Long-eared owl, Bat species (foraging), Sierra Nevada Snowshoe hare, Northern harrier, Olive-sided flycatcher	Aspen Riparian Mixed Hardwood	2.3	0	1.1	0	0	1.2	1.1	0.8
Mountain quail, Golden eagle (Mountain sagebrush for foraging), American badger, Loggerhead shrike, Sagebrush lizard	Mountain Mahogany Snowbrush Great Basin Mixed Scrub Bitterbrush Bitterbrush-Sagebrush Chaparral Mountain Sagebrush	63.8[1]	8.3	69.5[1]	8.3	55.3[1]	41.3	50.7[1]	18.1

SPECIES ANALYZED	VEGETATION /HABITAT	MITCHELL		PEAVINE		POEVILLE		PEAVINE/POEVILLE	
		USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE	USFS	PRIVATE
Golden eagle (foraging habitat), American badger, burrowing owl, Swainson's hawk (w/ large nesting trees)	Big Sagebrush Low Sagebrush Annual Grasses, Ruderal Urban and Developed	3.4	6.9	3.6	7.0	3.6	81.0	1.7	41.1
Bat species, Lahontan cutthroat trout	Riparian Mixed Hardwood Wet Meadow Water Water	0 Dog Creek	2.3 Sunrise Creek	0 Dog Creek	2.3 Sunrise Creek	0	0.8 Jones Cr., Bull Ranch Cr, Truckee River	0	3.0 Bull Ranch Cr., Truckee River

Source: (USFS 2014f).

[1] Includes approximately 15 acres of Bitterbrush-Sagebrush community on BLM-administered public land at the Bordertown Substation.

3.10.2 Environmental Consequences

Potential effects on special status wildlife species are evaluated by determining the potential for an alternative to:

- Result in a contribution to a current or predicted downward trend in habitat capability that would reduce a special status species' existing distribution;
- Result in a loss of viability of a special status species, or result in a trend toward federal listing; or
- Result in a jeopardy determination for a federally-listed species.

3.10.2.1 No Action Alternative

Under the No Action Alternative, there would be no impacts to special status wildlife or their habitats from the proposed project and subsequent operation and maintenance of the transmission line. There would be no increase in ground disturbance, habitat removal, or disturbance from the existing conditions. Wildlife assemblages would occur as they do currently.

3.10.2.2 Effects Common to All Action Alternatives

After the selection of the preferred project alternative, a Biological Assessment will be prepared as required by Section 7 of the ESA to evaluate the effects of project activities on federally-listed species (e.g., Lahontan cutthroat trout). Similar to the Biological Assessment, a Biological Evaluation will be completed for the preferred alternative to address specific impacts to Forest Service sensitive species.

Project construction may impact wildlife by altering migration and movement corridors from human disturbance and noise; removing, altering, or fragmenting habitat, or cause direct wildlife mortality from construction related equipment. When the line is operational, a number of long-term on-going impacts may occur. These include collisions with the lines and increased predation by raptors due to the increased availability of perches offered by the structures. The mechanisms of impacts and design features that would be implemented to avoid and minimize them are described in **Section 3.9.2.2.** These impacts and design features would be the same for special status species.

Earth moving activities can impact watersheds and aquatic wildlife. LCT and their habitat could be indirectly affected due to increased sediments, turbidity, and contaminants from construction activities. Fish population levels and survival have been linked to levels of turbidity and siltation in a watershed.

Design Features to Minimize Impacts to LCT

As described in **Section 3.6.2.2, Water Resources and Soils,** potential impacts to aquatic habitats would be addressed primarily through implementation of BMPs, restoration of project disturbances, and implementation of design features specific to minimizing impacts to water resources and soils (**Appendix B**). Design features address the potential for erosion and sedimentation from temporary road crossings by ensuring that stream crossings are properly planned and constructed. Design feature WA 12 would prohibit new road crossings on perennial

streams; WA 3 would keep staging areas away from streams and WA 4 prohibits poles within the 100-year floodplain of any stream or wetland.

Design feature WL 9 was specifically developed to avoid or minimize effects to LCT:

> WL 9. To limit the potential for impacts to aquatic resources, particularly to Lahontan cutthroat trout, pole sites or roads will not be placed within the 100-year floodplain in drainages occupied by Lahontan cutthroat trout, specifically Dog Creek and the Truckee River. During construction, no soil disturbing activities will occur within the 100-year floodplain of either drainage.

Under all action alternatives, with the restoration of project disturbances, effective BMPs and implementation of design features that include avoidance of LCT habitat, there would be no anticipated direct effects to LCT and only minimal potential for indirect effects. The project would not result in a jeopardy determination or result in the potential for listing other sensitive species.

Other special status species such avian, terrestrial mammals, or bat species, could be affected by construction of the project. Potential direct or indirect impacts to other special status species would be negligible to minor through utilization of the design features described in **Section 3.9.2.2.**

3.10.2.3 Mitchell Alternative

Table 3.10-2 indicates the potential habitat for special status wildlife species that could be impacted by the Mitchell Alternative. Impacts are expected to be similar as those presented for general wildlife (**Section 3.9.2.2)**. **Section 3.9.2.3** describes short- and long-term impacts to wildlife habitats for the Mitchell Alternative, which would also be applicable to special status wildlife. Impacts associated with construction and maintenance of the transmission line along the Mitchell Alternative are not expected to have adverse impacts to special status species wildlife species. This alternative has the most acres of forested habitat (29.6 acres) that would be converted to shrub habitat as a result of construction and maintenance. However, the amount of habitat removed for the project is minor in relation to existing available habitat.

Direct and indirect impacts range from negligible to minor and with the inclusion and implementation of design features, impacts are not anticipated to result in a contribution to a current or predicted downward trend in habitat capability that would reduce a species existing distribution, result in a species trend toward federal listing, or result in a jeopardy determination for an ESA species. Design features developed for the project reduce impacts to wildlife to negligible or minor, thus mitigation is not required.

3.10.2.4 Peavine Alternative

Table 3.10-2 indicates the potential habitat and special status wildlife species that could be affected by the Peavine Alternative. Impacts associated with construction and maintenance of the transmission line along the Peavine Alternative are not expected to have adverse impacts to special status species wildlife species. Impacts are expected to be similar as those presented for general wildlife (**Section 3.9.2.2**). **Section 3.9.2.4** describes short- and long-term impacts to wildlife habitats for the Peavine Alternative, which would also be applicable to special status

wildlife. The Peavine Alternative contains less forested habitat, approximately half that of the Mitchell Alternative (17.7 acres), but overall has slightly more diverse habitat types than along the Mitchell Alternative. As with all alternatives, brush habitat is the most abundant, particularly bitterbrush-sagebrush habitat.

Direct and indirect impacts for the Peavine Alternative would be the same as those described under the Mitchell Alternative.

3.10.2.5 Poeville Alternative

Table 3.10-2 indicates the potential habitat and special status wildlife species that could be affected by the Poeville Alternative. Impacts associated with construction and maintenance of the transmission line along the Poeville Alternative are not expected to have adverse impacts to special status species wildlife species. Impacts are expected to be similar as those presented for general wildlife (**Section 3.9.2.2**). **Section 3.9.2.5** describes short- and long-term impacts to wildlife habitats for the Poeville Alternative, which would also be applicable to special status wildlife. Only the Poeville Alternative has potential bat habitat within or adjacent to the variable width corridor, but adits or other mine workings are not expected to be impacted as a result of project construction.

Direct and indirect impacts for the Poeville Alternative would be the same as those described under the Mitchell Alternative.

3.10.2.6 Peavine/Poeville Alternative

Table 3.10-2 indicates the potential habitat and special status wildlife species that could be affected by the Peavine/Poeville Alternative. Impacts associated with construction and maintenance of the transmission line along the Peavine/Poeville Alternative are not expected to have adverse impacts to special status species wildlife species. Impacts are expected to be similar as those presented for general wildlife (**Section 3.9.2.2**). **Section 3.9.2.6** describes short- and long-term impacts to wildlife habitats for the Peavine/Poeville Alternative, which would also be applicable to special status wildlife.

Direct and indirect impacts for the Peavine/Poeville Alternative would be the same as those described under the Mitchell Alternative.

3.10.2.7 Cumulative Effects

Cumulative effects to special status wildlife have generally consisted as habitat impacts, which have been the same as described under the cumulative effects to wildlife (**Section 3.9.2.7**).

3.11 WILDFIRE

For the purposes of this analysis, the wildfire analysis area has been defined as the area within 2 miles of the proposed transmission line centerline of the action alternatives, as well as the area within 2 miles of the California and Bordertown substations. This analysis area was used because it captures the wildfire history and access within and adjacent to the potential locations of the transmission line.

3.11.1 Affected Environment

3.11.1.1 Wildfire History

Approximately 9,657 acres of the analysis area (15 percent) has burned in wildfires in the 13 years from 2000 to 2013 (BLM 2014a; CAL FIRE 2012) (**Table 3.11-1**). Large portions of the analysis area were also burned in wildfires occurring earlier than 2000, as shown on **Figure 3.7-1**.

Table 3.11-1 Fire History in the Analysis Area (2000-2013)

YEAR	NAME	ACRES IN ANALYSIS AREA[1]	TOTAL ACRES BURNED[1]
2000	Unknown/Unnamed	17	17
2000	Seneca Fire	493	1,109
2000	Peavine Fire	10	10
2000	Mitchell Canyon Fire	604	604
2001	Peavine Fire	66	66
2003	Red Rock Fire	118	118
2003	Robb Fire	1,356	2,197
2004	Verdi Fire	1,080	1,080
2004	Summerset Fire	14	14
2006	Verdi Fire	5,661	5,661
2007	Balls Canyon Fire	238	4,368
Total:		9,657	15,244

Source: (BLM 2014a; CAL FIRE 2012)

[1]This data contains only fires that were over 10 acres. There is no guarantee that the fire perimeters mapped and included are accurate or that all of the fires over 10 acres are included. Likewise, the fire perimeters include the outer edge of the fire boundary. Areas within the fire perimeter may not have burned.

The causes of wildfires within the analysis area include lightning, smoking, equipment use, debris burning, campfires, and arson (CAL FIRE 2012). Existing transmission lines occur within the analysis area, but according to the data, none of the past wildfires have been linked to being caused directly or indirectly by transmission lines. The BLM data (2014a) does not provide information of the cause of wildfires.

3.11.1.2 Wildfire Risk Rating

The Healthy Forests Restoration Act of 2003 was enacted to reduce hazardous fuels on public land for the protection of communities, watersheds, and certain other at-risk lands from catastrophic wildfire. The Wildland-Urban Interface as defined by the Healthy Forests Restoration Act is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels (National Wildfire Coordinating Group 2012).

All private land in Nevada that is within the analysis area with the exception of the Silver Lake community, north of U.S. Highway 395 has a fire risk rating of moderate or high (Washoe

County 2005). The communities of Verdi and Mogul, Nevada, are both adjacent to NFS land and are identified as Wildland-Urban Interface communities (Washoe County 2005). The fire risk rating for the communities of Verdi and Mogul is moderate. Within California, the fire risk rating is designated as "fire hazard severity zone". Portions of the Verdi community located in Sierra County, California, are within moderate, high, and very high fire hazard severity zones. Other private land in California within the analysis area is also within moderate to very high fire hazard severity zones (CAL FIRE 2007).

Power lines are generally considered to be critical infrastructure and to be at risk from wildland fire when they occur in Wildland-Urban Interface settings. Power lines through areas that cross NFS land adjacent to Wildland-Urban Interface settings are also generally considered critical infrastructure. The *Nevada Community Wildfire Risk/Hazard Assessment Project for Washoe County* (Washoe County 2005) inventoried fire hazards in Wildland-Urban Interface communities, including utility corridors. In Verdi, a lack of vegetation maintenance and clearing in power line corridors was noted. In Mogul, the vegetation was maintained, but the report indicated a 15-foot clearing would be better.

3.11.1.3 Existing Accessibility

There are approximately 95 miles of designated NFS roads and motorized trails within the analysis area (USFS 2011b). Based on an analysis of aerial photography, there is an additional approximately 323 miles of existing roads within the analysis area that occur on either private land or within a ROW owned by the state or county. The analysis area is accessible for firefighting efforts through a combination of these roads and trails and from overland foot travel or aircraft.

3.11.2 Environmental Consequences

Methods of Analysis

Direct and indirect effects were analyzed by evaluating the potential for increased risk of wildfires from the proposed transmission line.

3.11.2.1 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur. Thus, there would be no new areas of wildfire hazard or increase in threat of wildfire.

3.11.2.2 Effects Common to All Action Alternatives

Construction activities including hot exhaust pipes on vehicles coming in contact with dry vegetation, sparks from equipment striking rocks, use of explosives for blasting, or workers smoking have the potential to cause a fire.

A Fire Prevention Plan would be included in the COM Plan and implemented during construction (design feature FP 1, **Appendix B**). A Fire Prevention Plan specifies the types of firefighting suppression equipment required during construction, such as shovels, fire extinguishers, and water trucks. Smoking, welding and grinding, and other potential sources of ignition would be allowed in designated areas only during elevated fire ratings. Fire prevention

measures would minimize the potential for construction activities to cause a fire and would include the appropriate response to minimize the amount of damage and keep the fire small.

The transmission line may be a potential source of wildfire ignition if vegetation comes into contact with the conductors. These same hazards are present in the analysis area where existing power lines occur. Thus, new hazards would only be created along the length of the proposed transmission line that would not be located adjacent to an existing transmission or distribution line.

In forested communities trees falling onto the transmission line or wind blowing a conductor into trees may create a flashover to ground and cause a fire. Vegetation clearing limits are required to be maintained during the operational life of the proposed transmission line (California Public Resources Code 4293 and NAC 704.450). This would reduce the potential for the conductors and any trees to come into contact. Further, if an energized conductor were to fall to the ground and create a line-ground fault, high-speed relay equipment is designed to sense that condition and actuate circuit breakers to de-energize the line in less than a tenth of a second. This safety measure reduces the risk of fire from high voltage transmission lines. Nonetheless, wildfires may occur and may be more difficult to suppress due to the heavier fuel load (trees compared to grass and shrubs). Design feature FP 2 (**Appendix B**) requires fuels reduction within the variable-width corridor, which would reduce fuel loads.

3.11.2.3 Cumulative Effects

Implementation of a Fire Prevention Plan, maintaining the required vegetation clearance within the ROW, and high-speed relay equipment to de-energize the proposed transmission line in a failure would reduce the risk of wildfire. Design feature FP 2 would require fuels reductions within the variable-width corridor of the implemented action alternative, which would be adjacent to fuels reduction that has occurred from present resource management activities and reasonably foreseeable future management activities, particularly the Dog Valley Fuels Reduction and Ecosystem Enhancement Project (USFS 2009). The cumulative effects from any of the action alternatives would be negligible.

3.12 AIR QUALITY

3.12.1 Affected Environment

The air quality analysis area has been defined as the area within Sierra County, California, and Washoe County, Nevada. Air quality in the analysis area is governed by the Washoe County Health District Air Quality Management Division and the Northern Sierra Air Quality Management District.

The Clean Air Act established the National Ambient Air Quality Standards (NAAQS) for seven criteria pollutants. The criteria pollutants and their corresponding NAAQS are listed in **Table 3.12-1**.

Table 3.12-1 National Ambient Air Quality Standards

POLLUTANT	PRIMARY/ SECONDARY	AVERAGING TIME	LEVEL[1]	FORM
Carbon monoxide (CO)	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and secondary	Rolling 3 month average	0.15 µg/m^3	Not to be exceeded
Nitrogen dioxide (NO_2)	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and secondary	Annual	53 ppb	Annual mean
Ozone (O_3)	Primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate matter 2.5 microns or less diameter ($PM_{2.5}$)	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
	Primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
Particulate matter 10 microns of less diameter (PM_{10})	Primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur dioxide (SO_2)	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: (U.S. Environmental Protection Agency 2012)

[1] Units of measurement:

ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter

The closest ambient monitoring site of air quality to the project area is located in Reno, Nevada. The monitoring site is located in both a residential neighborhood and a commercial growth area and monitors PM_{10}, $PM_{2.5}$, O_3, CO, SO_2, and NO_2. The levels from this monitoring site show relatively high concentrations of pollutants due to urbanization (**Table 3.12-2**).

Table 3.12-2 Reno, Nevada, Ambient Monitoring Data

MONITOR, POLLUTANT (DATA COVERING RANGE OF YEARS)	AMBIENT YEARLY CONCENTRATION (MICROGRAMS PER CUBIC METER)
PM_{10} (2010-2012)	18
$PM_{2.5}$ (2010-2012)	6.2
CO (2010-2012)	0.3
O_3 (2010-2012)	0.03
NO_2 (2010-2012)	15.7
SO_2 (2011-2012[1])	0.5

Source: (Schnieder 2014)
[1] Monitoring began midway through December 2010

Pursuant to the Clean Air Act, the U.S. Environmental Protection Agency developed a designation to describe the air quality in a given area. Based on emission levels for each criteria pollutant, each area is classified as in "Attainment", "Non-Attainment", or "Unclassifiable". Areas classified as in Attainment are areas in which the pollutant has not exceeded the NAAQS. A Non-Attainment classification represents an area in which the pollutant has exceeded the NAAQS. An Unclassifiable designation is used when the area does not have sufficient data for classification.

Currently Sierra County, California, is in Attainment for all criteria pollutants and Washoe County, Nevada, is in Non-Attainment for PM_{10} (U.S. Environmental Protection Agency 2013), as shown in **Table 3.12-2**.

3.12.2 Environmental Consequences

Methods of Analysis

The potential direct and indirect impacts on air quality were analyzed and quantified using the impact indicator listed below.

- Emissions of criteria pollutants (CO, lead, NO_2, O_3, PM_{10}, $PM_{2.5}$, and SO_2) anticipated from construction, operation, and maintenance of the proposed project, and whether these emissions exceed the NAAQS.

Impact magnitude was separated into the following four possible levels:

- **Negligible** – no measureable change in existing ambient air quality;
- **Minor** – a small measureable change in existing ambient air quality, but project-related emissions are below the NAAQS for all criteria pollutants;
- **Moderate** – a moderate measureable change in existing ambient air quality, and project-related emission are at or near the NAAQS for one or more criteria pollutant; and
- **Major** – a large, easily measureable change in existing ambient air quality, and project-related emissions exceed the NAAQS for one of more criteria pollutant.

Design features listed in **Appendix B** have been developed to reduce or avoid certain impacts, including impacts on air quality. The analysis considers impacts of the project after the incorporation of these project design features.

3.12.2.1 No Action Alternative

Under the No Action Alternative, construction of the proposed project and subsequent operation and maintenance of the proposed transmission line would not occur; therefore there would be no project-related dust or exhaust emissions to affect existing air quality within the analysis area.

3.12.2.2 Effects Common to All Action Alternatives

Construction

Engine exhaust from the construction equipment and the personal vehicles that the construction workforce uses to commute to project area would directly generate emissions of all the criteria pollutants, with the exception of O_3. However, the NO_2 emissions from exhaust may naturally react with other pollutants in the atmosphere to form O_3 (California Office of Environmental Health Hazard Assessment 2007). Emissions of lead would be negligible, if measureable at all, because modern fuels are manufactured as unleaded. A list of the equipment that may be needed for construction of the proposed project is provided in **Table 2.3-2**. The amount of emissions of the other criteria pollutants would directly relate to the types of equipment needed and the length of time the equipment is used. The length of time that equipment is used was considered to be directly correlated with the length of the action alternative. Construction equipment would be equipped with manufacturer recommended or other appropriate mufflers and emission controls. In addition to engine exhaust, equipment and vehicle brakes would also generate brake dust (i.e., PM_{10} and $PM_{2.5}$ emissions).

Surface disturbance required for construction activities would remove vegetation cover and loosen soils. Wind and the operation of equipment over loose, bare soils would generate fugitive dust (i.e., PM_{10} and $PM_{2.5}$ emissions). The amount PM_{10} and $PM_{2.5}$ emissions generated from construction surface disturbance would depend on the amount of surface disturbance anticipated from each construction of each action alternative. The COM Plan would include a Dust Abatement Plan that describes construction measures and practices that would be implemented to control dust emissions.

Emissions of criteria pollutants generated from project equipment and vehicles would be temporary for the construction period. Construction of the proposed project is anticipated to occur over a period of 8 to 12 months, depending on weather. Construction surface disturbance would be restored following completion of project construction. Restoration of vegetation cover would prevent continued emissions of fugitive dust associated with exposed soils and wind erosion. Thus, construction of the proposed project would result in temporary impacts to ambient air quality.

Design feature AQ 1 (**Appendix B**) would limit project equipment and vehicles to speeds of 20 miles per hour or less when travelling on unpaved roads or on unpaved surfaces in the ROW/easement. Low travel speeds reduce fuel consumption and entrainment of fugitive dust near travel surfaces. Design feature AQ 2 would require construction surface disturbance to be

watered, as needed, to control fugitive dust emissions. Per design feature AQ 4, excavation and grading activities would be suspended when instantaneous gusts of wind in excess of 50 miles per hour and visible dust persist, and create a health hazard to neighboring property owners or visibility hazard to vehicular traffic.

With implementation of design features, temporary construction impacts on ambient air quality would be minor for PM10 and PM2.5 emissions for all action alternatives. Impacts from emissions of the other criteria pollutants would be negligible because of the relatively short construction period and proper mufflers and emission controls, as well the reduced fuel consumption from design feature AQ 1.

Operation and Maintenance

Operation and maintenance of the proposed project would result in temporary direct impacts to ambient air quality. Direct impacts would be from the exhaust and fugitive dust emissions generated by equipment and vehicles used for annual inspections and from removal of trees within the transmission line clearance area, as needed. Unexpected repairs may also require equipment and ground disturbance resulting in gaseous exhaust and fugitive dust emissions. Any emissions from operation and maintenance would be far less than emissions generated from construction activities because far less ground disturbance and equipment would be needed for maintenance or repairs. Impacts on ambient air quality would be negligible for all action alternatives and would be temporary for the duration of the maintenance or repair activities. All action alternatives would be in conformance with the Clean Air Act of 1979.

3.12.2.3 Cumulative Effects

As stated in **Section 3.12.1**, Sierra County is in attainment for all criteria pollutants and Washoe County is in attainment for all but PM_{10} (U.S. Environmental Protection Agency 2013). Major sources of PM_{10} emissions in Washoe County include motor vehicles, residential wood stoves, industrial processes, construction dust, windblown dust, street sand, prescribed burns, and open burning (Washoe County Health District 2012). Wildfires are also noted to be a major source of PM_{10} emissions in the county when they occur.

The present actions which correlate with one or more of the aforementioned major sources of PM_{10} emissions in Washoe County include OHV recreation, maintenance and use of the existing transportation network, urban development, and mining. Prescribed burns which have occurred within the CIAA as part of present resource management actions no longer contribute to PM_{10} emissions because the burns have been completed and the fires extinguished. The prescribed burns which would occur as part of reasonably foreseeable future resource management activities would incrementally increase PM_{10} emissions in the CIAA. Potential future wildfires would also have incremental increases in PM_{10} emissions. Increased PM_{10} emissions from reasonably foreseeable future actions and from potential future wildfires would be short-term for the duration of the action or the wildfires. Some PM_{10} emissions from potential wildfires may continue for months to several years after the fire from windblown dust caused by the loss of vegetation due to the fire.

The effects to air quality from construction of any of the action alternatives would be limited to fugitive dust emissions and equipment exhaust emissions. These emissions would occur

primarily during construction of the proposed project, but also to a much lesser degree during maintenance activities. Design features would be implemented during construction to reduce fugitive dust emissions. The COM Plan would also include a Dust Abatement Plan to reduce fugitive dust emissions. Limiting the number of maintenance inspections and equipment used for inspections would reduce exhaust emissions and dust emissions. Construction, operation, and maintenance of the proposed project would not result in emissions of criteria pollutants at levels that exceed the federal or county thresholds for attainment when combined with existing and anticipated emissions from present and reasonably foreseeable future actions.

3.13 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

This section discusses the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity. Specifically, this section compares the degree to which the action alternatives would sacrifice the productivity of a resource value that might benefit the environment in the long term, for the value of increased transmission reliability from the short-term use of NFS land and BLM-administered public land for the proposed transmission line. In this section of the EIS, short-term uses refer to the resource effects that occur from use of the ROW for operational life of the proposed transmission line. Long-term productivity refers to the productivity of these resources after the operational life of the proposed transmission line.

Construction of the proposed project, under any action alternative, would result in a number of temporary adverse impacts that would cease upon completion of the construction phase. Such impacts include soil disturbance, fugitive dust emissions, vehicle and equipment emissions, temporary increases in noise and emissions from project equipment, and wildlife displacement from construction noise disturbance. Temporary surface disturbance related to project construction would also result in clearing of vegetation communities, which also translates to loss of wildlife habitat. With the exception of forest communities within the transmission line clearance area, vegetation communities and wildlife habitat cleared during construction would be restored. Within the transmission line clearance area, vegetation cover would be restored, but trees would be removed for the operational life of the project. No significant decreases in the productivity of the project area due to project construction activities would be expected, as the majority of surface disturbance would be restored. Major repairs associated with project maintenance activities would be expected to result in similar impacts as construction activities, but would be infrequent, shorter in duration, and generally lesser in intensity. Thus, no significant decreases in the productivity of the project area due to project maintenance activities would be expected.

The proposed transmission line and associated modifications at the substations may exist for decades and longer. Over the long term, several decades to approximately one-hundred years, natural environmental balances are expected to be restored. Many of the effects discussed in this chapter are considered to be temporary (occurring only during construction activities), and many of the other impacts are considered short-term.

Over the operational lifetime of the proposed project, under any action alternative, long-term adverse impacts associated with land use (including private property value and uses), and visual

resources would occur. These long-term impacts are analyzed in each resource issue area in **Sections 3.2** through **3.12**.

3.14 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Section 1502.16 of NEPA requires the environmental document to include a discussion of "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." An irreversible commitment of resources occurs when resources are used, consumed, destroyed, or degraded during project construction and operation and cannot be reused or recovered. An irreversible commitment effectively removes the option of future resource use. Irretrievable commitments of resources occur when there are long-term losses of resource production or use. These losses are not permanent and can be reversed in the long term if project facilities or land uses change.

The irreversible and irretrievable commitments of resources resulting from the proposed project would be similar among the action alternatives. These commitments are presented in **Table 3.14-1**.

Table 3.14-1 Irreversible and Irretrievable Commitments of Resources

RESOURCE	IRREVERSIBLE COMMITMENTS	IRRETRIEVABLE COMMITMENTS	EXPLANATION
Visual Resources	No	Yes	Impacts on visual resources would occur through the operational life of the project. After operations, the pole structures and conductors could be removed and forest communities would be permitted to grow within the ROW/easement clearance area. Thus, the action alternatives would have irretrievable commitments, but no commitments that would be irreversible.
Land Use and Private Property	No	Yes	Loss of some land uses within the ROW/easement would occur in areas, particularly on private land where the proposed transmission line would not be located within an existing utility corridor. These land uses may be restored after the operational life of the project. Thus, the action alternatives would have irretrievable commitments of land uses for the operational life of the project. There would not be any irreversible commitments of land uses.
Public Health and Safety	No	No	There would be no irreversible or irretrievable commitments of public health and safety from the action alternatives.
Water Resources and Soils	No	Yes	No irreversible or irretrievable commitments to water resources would be anticipated. Irretrievable commitments of soils would occur in areas where pole structures are installed.
Vegetation	No	Yes	Forest communities cleared from within the transmission line clearance area for the operational life of the project would be an irretrievable commitment of forest vegetation.
Special Status Plants	No	No	No irreversible or irretrievable commitments of special status plant populations or individuals would be anticipated.
Wildlife	No	Yes	Wildlife displacement from loss of forested habitat within the transmission line clearance area would persist through operation of the project. Following the operational life of the project, forest communities would be permitted to grow within the clearance area. Thus, wildlife displacement would be an irretrievable commitment.
Special Status Wildlife	No	Yes	Special status wildlife displacement from loss of forested habitat within the transmission line clearance area would persist through operation of the project. Following the operational life of the project, forest communities would be permitted to grow within the clearance area. Thus, special status wildlife displacement would be an irretrievable commitment.

RESOURCE	IRREVERSIBLE COMMITMENTS	IRRETRIEVABLE COMMITMENTS	EXPLANATION
Wildfire	No	No	The action alternatives would not have any irreversible or irretrievable commitments related to wildfire.
Air Quality	No	No	Emissions from project construction and maintenance activities would be temporary and not exceed federal or state air quality standards. Air quality would return to existing conditions after completion of activities.
Cultural Resources	No	No	The action alternatives would not have any irreversible or irretrievable commitments to cultural resources.

In addition to the resource commitments identified in **Table 3.14-1**, construction and maintenance of the proposed project would require an irreversible commitment of energy as it relates to the fossil fuels needed for construction and maintenance equipment and vehicles. An irreversible commitment of construction materials would also be required from any of the action alternatives. However, energy consumption to manufacture the construction materials would not be anticipated because these materials would continue to be produced regardless of implementation of any of the action alternatives.

3.15 CONFORMANCE WITH APPLICABLE LAWS, REGULATIONS, POLICIES AND EXECUTIVE ORDERS

This EIS has been prepared in accordance with the applicable laws, regulations, policies, and executive orders listed in **Table 3.15-1**. A brief explanation or statement of conformance is provided in the table.

Table 3.15-1 Applicable Laws, Regulations, Policies, and Executive Orders

LAW, REGULATION, POLICY OR EXECUTIVE ORDER	STATEMENT OF CONFORMANCE
2014 California BLM and State Historic Officers Protocol Agreement (BLM 2014b)	Section 106 of the National Historic Preservation Act, as it pertains to the BLM-administered public land in the project area, was implemented in accordance with the California BLM and State Historic Officers Protocol Agreement (BLM 2014b).
American Antiquities Act of 1906 (as amended)	Design features (**Appendix B**) have been developed to prohibit the collection or disturbance of archeological sites encountered during construction. All prior cultural resource surveys and any potential future cultural resource surveys for the proposed project would be conducted by qualified archaeologists under a permit issued by the USFS.
American Indian Religious Freedom Act of 1978	Consultation with Native American Tribes was conducted and no areas or sites of traditional religious and cultural importance within the analysis area were identified (see **Section 3.1.1.1**). The proposed project would not restrict or otherwise limit access to any potential religious sites outside of the analysis area.
Archeological Resource Protection Act of 1979	Design features (**Appendix B**) have been developed to prohibit the collection or disturbance of archeological sites encountered during construction or maintenance of the project.
Bald and Golden Eagle Protection Act of 1940 (as amended)	The proposed project would not result in the "take" of bald eagles or golden eagles. All of the action alternatives would be in conformance with the Bald and Golden Eagle Protection Act of 1940, as amended.
BLM Manual 6500: Wildlife and Fisheries Management (1988)	Design features (**Appendix B**) have been incorporated into the proposed project to avoid or minimize impacts to wildlife and fisheries as much as feasible.
BLM Manual 6840: Special Status Species Management (2008a)	Design features (**Appendix B**) have been incorporated into the proposed project to avoid or minimize impacts on BLM special status species.
Clean Air Act of 1979 (as amended)	The proposed project would be compliant with the Clean Air Act of 1979, as amended, because emissions of criteria pollutants will be below the NAAQS (see **Section 3.12**). Other air pollution problems addressed in the Clean Air Act, such as acid rain or depletion of the ozone layer would not be affected by the proposed project.
Clean Water Act of 1977 (as amended)	The discharge of pollutants from a point source would not occur under any of the action alternatives. All impacts to waters of the United States would be permitted under Section 404 of the Clean Water Act.
Endangered Species Act of 1973 (as amended)	The proposed project would not jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The proposed project would not result in the "take" of any listed species.

LAW, REGULATION, POLICY OR EXECUTIVE ORDER	STATEMENT OF CONFORMANCE
Executive Order 11593 (cultural)	Compliant with Executive Order 11593, a cultural resource inventory was completed within the potential area of effects for each action alternative. Design features (**Appendix B**) have been developed to minimize adverse effects on cultural sites recommended as eligible for listing and sites currently listed on the NRHP.
Executive Order 11988 (floodplains)	The proposed project would not require occupancy within the 100-year floodplain. The proposed project would not modify the flood flow retention capability of the 100-year floodplain (see **Section 3.6.2.2**).
Executive Order 11990 (wetlands)	Compliant with Executive Order 11990, design features (**Appendix B**) have been developed to minimize impacts to wetlands on NFS land and BLM-administered public land.
Executive Order 12898 (environmental justice)	Compliant with Executive Order 12898, the USFS has completed an environmental justice analysis. A summary of the analysis conclusions is provided in Section 3.1.1.1.
Executive Order 13007 (American Indian sacred sites)	Consultation with Native American Tribes was conducted in accordance with Executive Order 13007. No areas of traditional religious and cultural importance or specific areas of cultural and/or geographical interest (i.e., sacred sites) within the analysis area were identified. See **Section 3.1.1.1**.
Executive Order 13175 (consultation and coordination with Indian Tribal Governments)	Consultation with Native American Tribes was conducted in accordance with Executive Order 13175. See **Section 3.1.1.1**.
Executive Order 13186 (Migratory Bird Treaty)	Pursuant to Executive Order 13186, the potential effects of the proposed project on migratory birds are evaluated in **Section 3.9**. Design features (**Appendix B**) have been developed to avoid impacting nesting migratory birds during construction.
Federal Land Policy Management Act of 1976	In accordance with the Federal Land Policy Management Act of 1976, this EIS evaluates the proposed project in terms of its conformity with the Eagle Lake RMP (BLM 2008b) and its potential effects on the various resources contributing to the multiple uses for which the BLM-administered public land in the project area is managed.
Historic Sites Act of 1935	The potential effects of the proposed project on historic properties listed on the NRHP or eligible for such listing have been evaluated. Consultation with the Nevada SHPO will continue for Peavine Ranch, and design features (**Appendix B**) and mitigation measures have been developed to reduce or avoid impacts as much as possible. Consultation with the California SHPO is in progress.

LAW, REGULATION, POLICY OR EXECUTIVE ORDER	STATEMENT OF CONFORMANCE
Memorandum of Understanding to Promote the Conservation of Migratory Birds (BLM and USFWS 2010)	Pursuant to the Memorandum of Understanding to Promote the Conservation of Migratory Birds (BLM and USFWS 2010), the potential effects of the proposed project on migratory birds are evaluated in **Section 3.9**. Design features (**Appendix B**) have been developed to avoid impacting nesting migratory birds during construction.
Migratory Bird Treaty Act of 1918 (as amended)	Design features (**Appendix B**) have been incorporated into the proposed project requiring pre-disturbance migratory bird nesting surveys if surface disturbance is unavoidable during the migratory bird nesting season. The proposed project would not result in the "take" of migratory birds, their eggs, or their nests.
National Bald Eagle Management Guidelines (USFWS 2007)	The proposed project would not result in the "take" of bald eagles or impact bald eagles. All of the action alternatives would be in conformance with the guidelines.
National Forest Management Act of 1976	In accordance with the National Forest Management Act of 1976, this EIS evaluates the proposed project in terms of its conformity with the Forest Plan (USFS 1986) and its potential effects on the various resources contributing to the multiple uses for which the NFS land in the project area is managed.
National Historic Preservation Act of 1966 (as amended)	In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, the potential effects of the proposed project on historic properties listed on the NRHP or eligible for such listing have been evaluated. Consultation with the Nevada SHPO will continue for Peavine Ranch, and design features (**Appendix B**) and mitigation measures have been developed to reduce or avoid impacts as much as possible. Consultation with the California SHPO is in progress.
Native American Graves Protection and Repatriation Act of 1990	Design features (**Appendix B**) require the procedures of the Native American Graves Protection and Repatriation Act of 1990 be implemented in the event that Native American human remains are encountered during construction. Consultation with Native American Tribes has not identified any sacred sites within the analysis area. If sites are found during construction, avoidance would be required until protection measures are developed.

CHAPTER 4 CONSULTATION AND COORDINATION

This section presents a summary of public participation in the scoping process and drafting of the EIS; the criteria and methods by which public input is evaluated; a list of the persons, groups, agencies, or tribes consulted in the preparation of the EIS, a list of preparers; and the distribution list.

4.1 PUBLIC PARTICIPATION SUMMARY

4.1.1 Public Scoping and Meetings

The NOI for this EIS was published in the Federal Register (Volume 76, Number 224) on November 21, 2011, thus initiating the public scoping period at the beginning of the EIS process to identify potential issues and concerns associated with the Proposed Action (i.e., Stateline Alternative) (see **Section 2.10.1**). The NOI provided dates, times, and locations of public scoping meetings and where to send scoping comments. A copy of the NOI is included in the EIS Scoping Summary Report dated May 15, 2012 (USFS 2012c).

Concurrent with the release of the NOI, the USFS issued a press release notifying local newspaper, television and radio media of the intent to develop an EIS and hold scoping meetings. Newspapers included the *Reno Gazette-Journal*, *Sierra Sun* and *Sierra County Prospect*. A one-page fact sheet was developed and made available at the front counter of the Humboldt-Toiyabe National Forest Supervisor's office in Sparks, Nevada.

The USFS developed a Scoping Notice as a means to inform the public through the mail about the project and encourage attendance at public scoping meetings. The notice provided dates and times of public scoping meetings and contacts for information and submittal of scoping comments. The Scoping Notice was mailed to individuals and organizations consisting of property owners in the project area, government agencies, and interested parties.

Public scoping meetings were held on December 6, 2011, December 8, 2011, and February 23, 2012. The first meeting was in Cold Springs, Nevada, and the other two meetings were held in Verdi, Nevada. Each meeting was held using an open house format where attendees were encouraged to walk around, meet representatives from the USFS, JBR (third-party contractor who would assist in developing the EIS), and NV Energy, view poster boards, and review aerial photographs of the various alignments. Although some attendees did not record their name on the scoping meeting sign-in sheets, sign-in sheets recorded 13 participants during the December 6, 2011, meeting, 21 participants during the December 8, 2011 meeting, and 26 participants during the February 26, 2012, meeting.

To inform the community of the project and encourage participation in the EIS process and public scoping meetings, the USFS also gave a short presentation to the Sierra County Board of Supervisors, Washoe County Commission, Reno City Council, and several neighborhood advisory boards. Presentations that were made after the December 2011 scoping meetings included a short summary of comments heard during scoping meetings.

4.1.2 Scoping Response

The USFS accepted written scoping comments by mail, e-mail, hand-delivery, and at public scoping meetings throughout the scoping period November 21, 2011, through March 5, 2012. Over 450 separate comments were compiled from 75 comment documents (e.g., letters, cards, e-mail). The majority of comments received were from individuals; however, comments were also received from government agencies, non-governmental organizations, and tribes.

4.1.3 Additional Public Participation Opportunities

Notification of the proposed project was originally published on the USFS Schedule of Proposed Actions (SOPA) on November 21, 2011. The SOPA is a list of proposals that will begin or are undergoing environmental analysis and documentation by the USFS. The SOPA listing for the proposed project included a link to a project website, which the USFS created to make project information more accessible to the public:

http://www.fs.usda.gov/goto/htnf/bordertownline

The project website includes links to project maps, the Scoping Notice, and the Preliminary POD, as well as links to instructions on how to provide comments or request more information.

4.2 CONSULTATION SUMMARY

4.2.1 Endangered Species Act Section 7 Consultation

Consultation with the USFWS is required under Section 7 of the ESA. Section 7 directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the USFWS, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of federal lands as well as other federal actions that may affect listed species, such as federal approval of private activities through the issuance of federal permits, licenses, or other actions.

Coordination and informal consultation with the USFWS regarding Webber ivesia has been made throughout the development of the EIS, and included a field visit to known populations near project alternatives on June 12 and 13, 2013. After the selection of the preferred project alternative, the USFS will prepare a Biological Assessment, pursuant to Section 7 of the ESA, for the preferred project alternative to evaluate the effects of project activities on federally-listed species (e.g., Webber ivesia and Lahontan cutthroat trout).

4.2.2 Tribal Consultation

Tribal consultation is required by Executive Order 13175, which states, “Each agency shall have a process to ensure meaningful and timely input by Tribal officials in the development of regulatory policies that have Tribal implications.”

In letters dated November 10, 2011, the USFS sent a draft NOI and Scoping Notice to the Reno Sparks Indian Colony, the Washoe Tribe of Nevada and California, and the Pyramid Lake Paiute Tribe. The USFS met with the Washoe Tribe of Nevada and California on February 22, 2011, and the Reno-Sparks Indian Colony on August 8, 2011 to discuss the project during face-to-face consultation meetings. At the request of the Reno-Sparks Indian Colony, the USFS hosted a field

trip to the project site on July 10, 2012. The USFS will continue tribal consultation through the completion of the NEPA process.

4.2.3 National Historic Preservation Act Section 106 Consultation

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are properties that are included in the NRHP or that meet the criteria to be eligible for inclusion in the NRHP. A Cultural Report was submitted to the Nevada and California SHPO for consultation and concurrence. The Nevada SHPO concurred with the determination of eligibility and effects for this project on June 19, 2014, except for the request for continued consultation on Peavine Ranch. The USFS is continuing consultation with the California SHPO. A copy of the letters from the California and Nevada SHPO are available in the project record.

4.3 DISTRIBUTION OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

The 45-day public comment period will begin the day the Notice of Availability is published in the Federal Register. The DEIS will be distributed to agencies and tribes who were consulted or were cooperators on the project; as well as interested organizations, businesses, and individuals that attended public scoping meetings, provided comment during the scoping period, or are on project mailing lists and who specifically requested a copy. Letters announcing the availability of the Draft EIS have been sent to all contacts on the mailing list. The mailing list is provided in **Appendix D**.

Appendix D lists those individuals and organizations who received hard copies of this Draft EIS or a copy of the Draft EIS on compact disk. Additional compact disks are available to interested parties that request them. This Draft EIS is also available online at:

http://www.fs.usda.gov/goto/htnf/bordertownline

Hard copies of the Draft EIS will also be available for review at the following locations:

Northwest Reno Library
2325 Robb Drive
Reno, Nevada 89523

Verdi Library
270 Bridge Street
Verdi, Nevada 89439

North Valleys Library
1075 North Hills Boulevard, #340
Reno, Nevada 89506

Bureau of Land Management
Eagle Lake Field Office
2950 Riverside Drive
Susanville, California 96130

4.4 COMMENTS

Letters and comments received by the agencies, tribes, and other organizations, businesses and individuals on the DEIS will be reviewed and evaluated by the USFS to determine if information provided in the comments requires formal response or contains new data that identifies deficiencies in the EIS. All comments will receive a response in the Final EIS.

4.5 LIST OF REVIEWERS, CONTRIBUTORS AND PREPARERS

The USFS Interdisciplinary Team members and other representatives from cooperating agencies were responsible to review the EIS and are listed in **Table 4.5-1**.

Table 4.5-1 USFS and Cooperating Agency Interdisciplinary Team and Technical Specialists

NAME	LOCATION/OFFICE	ROLE
Lead Agency – USFS Humboldt-Toiyabe National Forest		
Marnie Bonesteel	HTNF Supervisor's Office	USFS Project/Interdisciplinary Team Lead
Maureen Easton	Carson Ranger District	Wildlife, Special Status Wildlife, Noxious Weeds
Amanda Brinnand	Carson Ranger District	Vegetation, Forest Product Resources
Troy Jorgensen	Carson Ranger District	Roads and Transportation
Dave Reis	HTNF Supervisor's Office	Visual Resources
Sally Champion	Carson Ranger District	Water Resources and Soils
Elizabeth Bergstrom	Carson Ranger District	Special Status Plants
Daniel Morris	Carson Ranger District	Recreation
Michael Wilde	Carson Ranger District	Wildfire and Fuels Management
Joseph Garrotto	Carson Ranger District	Cultural Resources
Cooperating Agency – Bureau of Land Management		
Jill Poulsen	Eagle Lake Field Office	BLM Project Lead
Cooperating Agency – Nevada Division of Wildlife		
Mark Freese	Reno, Nevada	Wildlife, Special Status Wildlife,
Cooperating Agency – Truckee Meadows Planning Agency		
Sienna Reid	Reno, Nevada	Alternatives, Land Use
Cooperating Agency – Sierra County		
Brandon Pangman	Downieville, California	Alternatives, Land Use
Cooperating Agency – Washoe County		
Bill Whitney	Reno, Nevada	Alternatives, Land Use
Cooperating Agency – City of Reno		
Vern Kloos	Reno, Nevada	Alternatives, Land Use

Stantec Consulting Services Inc., formerly JBR Environmental Consultants, Inc., is a third-party contractor for this EIS. Stantec and its subcontractors (**Table 4.5-2**) prepared resource specialist reports detailing the affected environment, analyzing impacts to these resources from the No Action Alternative and action alternatives.

Table 4.5-2 Third-Party Contractor Preparers

NAME	LOCATION	ROLE/RESOURCE	EDUCATION	YEARS EXPERIENCE
Stantec Consulting Services Inc.				
Nancy Kang	Reno, Nevada	Project Manager, Water Resources and Soils, Vegetation, Special Status Plants	B.S., Botany	25
Greg Brown	Sandy, Utah	Assistant Project Manager	B.S., Natural Resource Management	23
George Dix	Reno, Nevada	Visual Resources, Recreation, Vegetation, Wildfire and Fuels Management, Cumulative Effects, GIS analysis, mapping	B.S., Environmental Resource Management	10
Wendy Broadhead	Reno, Nevada	Wildlife, Special Status Wildlife	B.S., Plant Science; B.A., Anthropology; B.A., Art	27
Steven Morton, AICP	Reno, Nevada	Land Use and Private Property, Roads and Transportation	B.A., General Studies	12
Catherine Schnurrenberger	Reno, Nevada	Vegetation, Special Status Plants	M.S., Hydrology; B.S., Range and Wildlands Science	26
Aaron Hoberg, EIT	Reno, Nevada	Air Quality	B.S., Chemical Engineering	6
Tracy Shane	Elko, Nevada	Vegetation	M.S., Environmental and Natural Resource Sciences; B.S., Animal Science	14
Jennifer Prince-Mahoney	Mount Aukum, California	Cultural Resources	NEPA Specialist Certification; B.A., Anthropology	23
Jason Trook	Reno, Nevada	GIS analysis, mapping, data management	M.S., Geography; B.A., Anthropology; GIS Certification	12
Christine Johnson	Reno, Nevada	GIS analysis, mapping, data management	B.S., Geology	32
Nick Faust	Sandy, Utah	GIS analysis, mapping, data management	B.S., Geography	3
Allison Araya	Reno, Nevada	GIS analysis, mapping	Bachelors of Environmental Design, Architecture	6
Far Western Anthropological Research Group, Inc.				
D. Craig Young, PhD	Carson City, Nevada	Cultural Resources	Ph.D., Anthropology M.A., Anthropology	27
Albert Garner	Carson City, Nevada	Cultural Resources	B.S., Anthropology	10

NAME	LOCATION	ROLE/RESOURCE	EDUCATION	YEARS EXPERIENCE
Enertech Consultants				
Christopher Hooper	Campbell, California	Electric and Magnetic Fields	B.A., Computer Mathematics	29
Asher Sheppard Consulting				
Asher Sheppard, PhD	Santa Rosa, California	Electric and Magnetic Fields	Ph.D., Physics M.S., Physics	39
Electrical Consultants, Inc.				
Crystal Kuntz, PE, MBA	Billings, Montana	Purpose and Need	Master of Business Administration B.S., Civil Engineering	17
Dave Leary, PE	Billings, Montana	Purpose and Need	M.S., Electrical Engineering B.S., Electrical Engineering	20

CHAPTER 5 REFERENCES, ACRONYMS, GLOSSARY, AND INDEX

5.1 REFERENCES

Altman, B., & Sallabanks, R. (2012). Olive-sided Flycatcher (*Contopus cooperi*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/502

Arsenault, D. P., Wilson, G. E., & Neel, L. (2002). *Flammulated Owls in the Spring Mountains, Nevada*. Reno, Nevada: Avian Research Center of Nevada.

Avian Power Line Interaction Committee. (2006). *Suggested Practices for Avian Protection on Power Lines: The State of the Art 2006*. Washington, D.C., and Sacramento, California: Edison Electric Institute, Avian Power Line Interaction Committee, and the California Energy Commission.

Avian Power Line Interaction Committee. (2012). *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*. Washington, D.C.: Edison Electric Institute and Avian Power Line Interaction Committee.

Bat Conservation International. (2012). *Species Accounts for North American Bats*. Retrieved from http://www.batcon.org/index.php/all-about-bats/species-profiles.html

Beier, P., & Drennan, J. E. (1997). Forest Structure and Prey Abundance in Foraging Areas of Northern Goshawks. *Ecological Applications, 7*(2), 564-571.

Bell, J. W., & Garside, L. J. (1987). *Geologic Map of the Verdi 7.5' Quadrangle* [Map]. 1:24,000. Reno, Nevada: Nevada Bureau of Mines and Geology.

Bogen, M. A., Valdez, E. W., & Navo, K. W. (1998). *Western Small-footed Myotis: Myotis ciliolabrum*. In proceedings of the Western Bat Work Group Workshop.

Bradley, P. V., O'Farrell, M. J., Williams, J. A., & Newmark, J. E. (Eds.). (2006). *The Revised Nevada Bat Conservation Plan*. Reno, Nevada: Nevada Bat Working Group.

Brown, P. E., & Berry R. E. (2002). *Bat Survey of Selected Mine on Peavine Hill, Washoe County, Nevada*. Unpublished document.

Bureau of Land Management (BLM). (1986). *Manual H-8410-1 - Visual Resource Inventory* (Release No. 8-28). U.S. Department of the Interior, Bureau of Land Management.

Bureau of Land Management (BLM). (1988). *Manual 6500: Wildlife and Fisheries Management*. U.S. Department of the Interior, Bureau of Land Management.

Bureau of Land Management (BLM). (2007). *Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands* (Instruction Memorandum No. 2008-009). Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management.

Bureau of Land Management (BLM). (2008a). *Manual 6840: Special Status Species Management* (Release No. 6-125). U.S. Department of the Interior, Bureau of Land Management.

Bureau of Land Management (BLM). (2008b). *Record of Decision: Eagle Lake Resource Management Plan*. Susanville, California: U. S. Department of the Interior, Bureau of Land Management, Eagle Lake Field Office.

Bureau of Land Management (BLM). (2014a). *NV Fire History 2000 – 2013* [Vector digital data]. Reno, Nevada: U.S. Department of the Interior, Bureau of Land Management, Nevada State Office, Mapping Sciences.

Bureau of Land Management (BLM). (2014b). *State Protocol Agreement among the California State Director of the Bureau Of Land Management and the California State Historic Preservation Officer and the Nevada State Historic Preservation Officer Regarding the Manner in which the Bureau Of Land Management will Meet its Responsibilities Under the National Historic Preservation Act and the National Programmatic Agreement Among the BLM, The Advisory Council On Historic Preservation, and The National Conference of State Historic Preservation Officers*. U.S. Department of the Interior, Bureau of Land Management, California State Historic Preservation Office, and Nevada State Historic Preservation Office.

Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service. (2010). *Memorandum of Understanding Between the U.S. Department of the Interior, Bureau of Land Management and the U. S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds*. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management, and Fish and Wildlife Service.

California Department of Fish and Wildlife (CDFW). (2005a). *California Wildlife Habitat Relationships (CWHR) System*. Retrieved from http://www.dfg.ca.gov/biogeodata/cwhr/wildlife_habitats.asp#Shrub

California Department of Fish and Wildlife (CDFW). (2005b). Life History Account: Wolverine. In D. C. Zeiner, W. F. Laudenslayer, Jr., K. E. Mayer, and M. White (Eds.), *California's Wildlife* (Vol. I-III). Sacramento, California: California Department of Fish and Wildlife.

California Department of Fish and Wildlife (CDFW). (2011). *A Status Review of the Mountain Yellow-legged Frog (Rana sierra and Rana muscosa)*. Retrieved on July 31, 2012, from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=40357

California Department of Forestry and Fire Protection (CAL FIRE). (2007). *Draft Fire Hazard Severity Zones in LRA: Sierra County* [Map]. Sacramento, California: California Department of Forestry and Fire Protection, Fire and Resource Assessment Program.

California Department of Forestry and Fire Protection (CAL FIRE). (2012). *Fire Perimeters (fire 12_1)* [Vector digital data]. Sacramento, California: California Department of Forestry and Fire Protection.

California Native Plant Society (CNPS). (2012). *Inventory of Rare and Endangered Plants of California* [Data file]. Retrieved from http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi

California Natural Diversity Database (CNDDB). (2013). RareFind3 [Software application]. Sacramento, California: California Department of Fish and Wildlife, Biogeographic Data Branch.

California Office of Environmental Health Hazard Assessment. (2007). *Health Effects of Diesel Exhaust*. Retrieved on June 9, 2014, from http://oehha.ca.gov/public_info/facts/dieselfacts.html

CFA, Inc. (2007). Merger & Resubdivision Parcel Map 4861A [Map]. 1:360. Reno, Nevada: Washoe County, Nevada.

City of Reno. (2005). *Annexation and Land Development of the City of Reno, Nevada: A Codification of Title 18*. Reno, Nevada: City of Reno City Council.

City of Reno. (2007). [Interactive map of geographic information system zoning and property data for the City of Reno]. *GIS Map Server*. Retrieved from http://maps.cityofreno.net/

City of Reno. (2012). *City of Reno Master Plan: Policy Plan*. Reno, Nevada: City of Reno Community Development.

Collins, P. W. (1998). Sierra Nevada Snowshoe Hare, Lepus Americanus Tahoensis. In B. C. Bolster (Ed.), *Terrestrial Species of Special Concern in California* (pp. 80-81). Sacramento, California: California Department of Fish and Wildlife.

Cox, M. (2012). State Game Staff Biologist with the Nevada Department of Wildlife. Personal communications with Wendy Broadhead, Senior Biologist with JBR Environmental Consultants, Inc., Reno, Nevada. August 6, and October 11, 2012.

Cox, M., Lutz, D. W., Wasley, T., Fleming, M., Compton, B. B., Keegan, T., Stroud, D., Kilpatrick, S., Gray, K., Carlson, J., Carpenter, L., Urquhart, K., Johnson, B., & McLaughlin, C. (2009). *Habitat Guidelines for Mule Deer: Intermountain West Ecoregion*. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies.

Cronquist, A., Holmgren, A. H., Holmgren, N. H., Reveal, J. L., & Holmgren, P. K. (1989). *Intermountain Flora (IMF): Vascular Plants of the Intermountain West, U.S.A. Volume 3, Part B: Fabales*. New York City (Bronx): New York: New York Botanical Garden.

Delacorte, M. G. (1997). *Pah Rah Uplands: Culture Change along the Eastern Sierra Nevada/Cascade Front 7*. Davis, California: Far Western Anthropological Research Group, Inc.

Dunham, S., Butcher, L., Charlet, D. A., & Reed, J. M. (1996). Breeding Range and Conservation of Flammulated Owls (*Otus flammeolus*). *Journal of Raptor Research, 30*(4), 189-193.

Easton, M. (2013). District Wildlife Biologist with the Humboldt-Toiyabe National Forest Carson Ranger District. Personal communication, via e-mail, with Wendy Broadhead, Senior Ecologist with JBR Environmental Consultants, Inc., Reno, Nevada Office. October 16, 2012.

Easton, M. (2014). District Wildlife Biologist with the Humboldt-Toiyabe National Forest Carson Ranger District. Personal communication, via e-mail, with Wendy Broadhead, Senior Ecologist with JBR Environmental Consultants, Inc., Reno, Nevada Office. March 3, 2014.

Elston, R. G. (1982). Good Times, Hard Times: Prehistoric Culture Change in the Western Great Basin. In D. B. Madsen & J. F. O'Connell (Eds.), *Man and Environment in the Great Basin* (pp. 186-206). Washington, D.C.: Society for American Archaeology.

Elston, R. G. (1986). Prehistory of the Western Area. In W. C. Sturtevant (Ed.), *Handbook of North American Indians: Great Basin* (Vol. 11) (pp. 135-148). Washington D.C.: Government Printing Office.

Elston, R. G. (1994). How Will I Know You? Archaeological Visibility of the Numic Spread in the Western Great Basin. In D. B. Madsen & D. Rhode (Eds.), *Across the West: Human Population Movement and the Expansion of the Numa* (pp. 150-151). Salt Lake City, Utah: University of Utah Press.

Elston, R. G., Davis, J. O., Leventhal, A., & Covington, C. (1977). *The Archeology of the Tahoe Reach of the Truckee River*. Reno, Nevada: University of Nevada, Reno.

Enertech Consultants and Asher Sheppard Consulting (Enertech and Sheppard). (2013). *Electric and Magnetic Field Evaluation for Proposed Bordertown to California 120 kV Transmission Line*. Unpublished document.

Federal Emergency Management Agency (FEMA). (2009). *Flood Insurance Rate Map: Washoe County, Nevada, and Incorporated Areas* (Map Number 32031C3013G). 1:6,000. Oakton, Virginia: Federal Emergency Management Agency, National Flood Insurance Program.

Federal Emergency Management Agency (FEMA). (2012). *Flood Insurance Rate Map: Sierra County, California, and Incorporated Areas* (Map Number 06091C0500C). 1:24,000. Oakton, Virginia: Federal Emergency Management Agency, National Flood Insurance Program.

Federal Emergency Management Agency (FEMA). (2013a). *Flood Insurance Rate Map: Washoe County, Nevada, and Incorporated Areas* (Map Number 32031C2813H). 1:6,000. Oakton, Virginia: Federal Emergency Management Agency, National Flood Insurance Program.

Federal Emergency Management Agency (FEMA). (2013b). *Flood Insurance Rate Map: Washoe County, Nevada, and Incorporated Areas* (Map Number 32031C2814H). 1:6,000. Oakton, Virginia: Federal Emergency Management Agency, National Flood Insurance Program.

Federal Register. *2013a Designation of Critical Habitat for Ivesia webberi (Webber's ivesia), Proposed Rule*. Federal Register 78:149 (August 2, 2013): 46862-46889.

Floyd, T., Elphick, C., Chisholm, G., Mack, K., Elston, R., Ammon, E., & Boon, J. (2007). *Atlas of the Breeding Birds of Nevada*. Reno, Nevada: University of Nevada Press.

Franklin, A., Noon, B., & George, T. L. (2002). What is Habitat Fragmentation? *Studies in Avian Biology, 25*, 20-29.

Garner, A. R., Young, D. C., & Rice, S. (2013). *Cultural Resources Inventory for the Bordertown to California 120kV Transmission Line Project Sierra County, California and Washoe County, Nevada* (Humboldt-Toiyabe National Forest Report No. R2011041702128) (Bureau of Land Management, Eagle Lake Field Office Report No. SU2-2013-05). Davis, California: Far Western Anthropological Research Group Inc.

Garner, A. R., Brandy, P., & Young, D. C. (2014). *Cultural Resources Sensitivity Analysis for Access Road Planning on the Bordertown to California 120kV Transmission Line Project*. Davis, California: Far Western Anthropological Research Group Inc.

Garrett, K. L., Raphael, M. G., & Dixon, R. D. (1996). White-headed Woodpecker (*Picoides albolarvatus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/252

Goodguide Scorecard. (2013). *Clean Water Act Status Report Comparative Rankings Honey-Eagle Lakes Watershed*. Retrieved on October 16, 2013, from http://scorecard.goodguide.com/env-releases/water/cwa-watershed.tcl?huc8=18080003

Grayson, D. K. (1993). *The Desert's Past: A Natural Prehistory of the Great Basin*. Washington, D.C.: Smithsonian Institution Press.

Great Basin Bird Observatory. (2010). *Nevada Comprehensive Bird Conservation Plan*. Reno, Nevada: Great Basin Bird Observatory.

Gutiérrez, R. J., & Delehanty, D. J. (1999). Mountain Quail (*Oreortyx pictus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved on August 10, 2012, from http://bna.birds.cornell.edu/bna/species/457

Gyug, L. W., Dobbs, R. C., Martin, T. E., & Conway, C. J. (2012). Williamson's Sapsucker (*Sphyrapicus thyroideus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/285

Hall. (1995). *Mammals of Nevada*. Reno, Nevada: University of Nevada Press.

Harness, R. E., & Wilson, K. R. (2001). Electric-Utility Structures Associated with Raptor Electrocutions in Rural Areas. *Wildlife Society Bulletin, 29*(2), 612-623.

Innes, R. J. (2013). *Odocoileus hemionus* (Fire Effects Information System) [Data file]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Science Laboratory.

International Agency for Research of Cancer Working Group on the Evaluation of Carcinogenic Risks to Humans. (2002). *IARC Monographs on the evaluation of carcinogenic risks to humans: Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields* (Vol. 80). Lyon, France: IARC Press.

International Commission on Non-Ionizing Radiation Protection (ICNIRP). (2010). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). *Health Physics*, 99(6), 818-836.

Jackson, R. J., Jackson, T. L., Miksicek, C., Roper, K., & Simons, D. (1994). *Framework for Archaeological Research and Management, National Forests of the North Central Sierra Nevada, Unit 1, Volume A*. Document submitted to U.S. Department of Agriculture, Forest Service, Eldorado National Forest.

Jackson, J. A., Ouellet, H. R., & Jackson, B. J. (2002). Hairy Woodpecker (*Picoides villosus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/702

Jameson. E., & Peeters, H. (1988). *California Mammals*. Berkeley, California: University of California Press.

JBR Environmental Consultants, Inc (JBR). (2009a). *Bordertown Substation to California Substation 120 kV Transmission Line Constraint and Opportunity Study*. Unpublished document prepared for NV Energy.

JBR Environmental Consultants, Inc (JBR). (2009b). *Bordertown to California 120 kV Transmission Line Project Preliminary Plan of Development*. Unpublished document prepared for NV Energy.

JBR Environmental Consultants, Inc. (JBR). (2013a). *Golden Eagle and Raptor Survey 2012: Bordertown to California 120 kV Transmission Line*. Unpublished document.

JBR Environmental Consultants, Inc. (JBR). (2013b). *Noxious Weed Risk Assessment Bordertown to California 120 kV Transmission Line Project*. Unpublished document.

Johnson-Groh, C. L., & Lee, J. M. (2002). Phenology and Description of Two Species of Botrychium (Ophipglossaceae). *American Journal of Botany, 89*(10), 1624-1633.

Johnson-Groh, C. L., Reidel, C., Schoessler, L., & Skogen, K.. (2002). Below Ground Distribution and Abundance of Botrychium Gametophytes and Juvenile Sporophytes. *American Fern Journal, 92*, 80-92.

King, T. F. (1998). *Cultural Resource Laws & Practice: An Introductory Guide*. Walnut Creek, California: Altamira Press.

Klute, D. S., Ayers, L. W., Green, M. T., Howe, W. H., Jones, S. L., Shaffer, J. A., Sheffield, S. R., & Zimmerman, T. S. (2003). *Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States* (Biological Technical Publication FWS/BTP-R6001-2003). Washington, D.C.: U.S. Department of Interior, Fish and Wildlife Service.

Kochert, M. N., Steenhof, K., Mcintyre, C. L., & Craig, E. H. (2002). Golden Eagle (*Aquila chrysaetos*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/684

Lewinsky-Haapsaari, J., & Norris, D. (1998). Orthotrichum shevockii (Orthotrichaceae), a new moss species from the Southern Sierra, California. *The Bryologist 101*(3), 435-438.

Lowther, P. E., Celada, C., Klein, N. K., Rimmer, C. C., & Spector, D. A. (1999). Yellow Warbler (*Setophaga petechia*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/454

Marks, J. S., Evans, D. L., & Holt, D. W. (1994). Long-eared Owl (*Asio otus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology; Retrieved from http://bna.birds.cornell.edu/bna/species/133

McCallum, D. A. (1994). *Flammulated, Boreal, and Great Gray Owls in the United States: A Technical Conservation Assessment* (General Technical Report RM-253). Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

McGuire, K. R. (2000). *Archaeological Investigations Along the California-Great Basin Interface: The Alturas Transmission Line Project*. Davis, California: Far Western Anthropological Research Group, Inc.

McGuire, K. R. (2002). *Boundary Lands: Archaeological Investigations Along the California-Great Basin Interface*. Nevada State Museum Anthropological Papers 24, Carson City, Nevada.

Mellison, C. (2013). Fisheries Biologist with the United States Fish and Wildlife Service, Reno, Nevada. Personal conversation with Wendy Broadhead, Senior Ecologist, JBR Environmental Consultants, Inc. , regarding LCT fisheries in the Truckee Basin. October 21, 2013.

Michael Clayton & Associates. (1992). *Western Regional Corridor Study*. Carson City, Nevada: Sierra Pacific Power Company.

Moore, M. W., & Burke, T. D. (1992). *Cultural Resources Inventory and Evaluation: Truckee River Flood Control Project, Washoe and Storey Counties, Nevada*. Sacramento, California: U.S. Army Corps of Engineers.

Morefield, J. D. (Ed.). (2001). *Nevada Rare Plant Atlas*. Carson City, Nevada: Nevada Natural Heritage Program.

Moyle, P. B. (2002). *Inland Fishes of California: Revised and Expanded*. Berkeley, California: University of California Press.

Nachlinger, J. L., Peterson, F. F., & Williams, M. (1992). *Peavine Mountains, Nevada*. Reno, Nevada: Northern Nevada Native Plant Society.

National Institute of Environmental Health Sciences. (1999). *Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields: Prepared in Response to the 1992 Energy Policy Act (PL 102-486, Section 2118)* (National Institute of Health Publication No. 99-4493). Research Triangle Park, North Carolina: National Institute of Environmental Health Sciences.

National Wildfire Coordinating Group. (2012). *National Wildfire Coordinating Group (NWCG): Glossary of Wildland Fire Terminology*. Retrieved from http://www.nwcg.gov/pms/pubs/glossary/w.htm

Natural Resource Conservation Service (NRCS). (2012). [Interactive map of NRCS soil map units]. *Web Soil Survey*. Retrieved from http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

NatureServe Explorer. (2012). *NatureServe Explorer Species Index*. Retrieved from http://www.natureserve.org/

Nevada Department of Wildlife (NDOW). (2011). *Nevada Department of Wildlife 2010-2011 Big Game Status Report*. Reno, Nevada: Nevada Department of Wildlife.

Nevada Department of Wildlife (NDOW). (2012a). Letter received in response to request for information/consultation with NDOW for NV Energy's Proposed Bordertown to California 120kV Transmission Line Project. May 2012.

Nevada Department of Wildlife (NDOW). (2012b). *Nevada Department of Wildlife 2011-2012 Big Game Status Report*. Reno, Nevada: Nevada Department of Wildlife.

Nevada Department of Wildlife (NDOW). (2013a). *Nevada Department of Wildlife 2012-2013 Big Game Status Report*. Reno, Nevada: Nevada Department of Wildlife.

Nevada Department of Wildlife (NDOW). (2013b). *Nevada Wildlife Action Plan*. Reno, Nevada: Nevada Department of Wildlife.

Nevada Division of Environmental Protection. (2012). *Nevada's 303(d) List of Impaired Waters*. Retrieved on June 20, 2012, from http://ndep.nv.gov/bwqp/file/303d_list09-att1.pdf

Nevada Natural Heritage Program (NNHP). (2011). *Noxious Weeds Data* [Vector digital data]. Retrieved from http://heritage.nv.gov/gis

Nevada Natural Heritage Program (NNHP). (2012). Letter dated May 10, 2012, addressing endangered, threatened, candidate, and/or at risk plant and animal taxa for Bordertown to California 120 kV Transmission Line Project.

North American Electric Reliability Corporation (NERC). (2005). *System Performance Following Loss of Two or More Bulk electric System Elements (Category C). Number TPL-003-0*. Atlanta, Georgia: North American Electric Reliability Corporation.

Parker, P. L., & King, T. F. (1998). *Guidelines for the Evaluation and Documentation of Traditional Cultural Properties*. Washington, D.C.: U.S. Department of the Interior, National Park Service.

Parker, K. L., Robbins, C. T., & Hanley, T. A. (1984). Energy Expenditures for Locomotion by Mule Deer and Elk. *Journal of Wildlife Management, 48*, 474-488.

Pendleton, L. S. A., McLane, A. R., & Thomas, D. H. (1982). *Cultural Resource Overview Carson City District West Central Nevada* (Cultural Resource Series No. 5). Reno, Nevada: Bureau of Land Management.

Perrine, J. D., Campbell, L. A., & Green, G. A. (2010). *Sierra Nevada Red Fox (Vulpes vulpes necator): A Conservation Assessment* (U.S. Department of Agriculture Report No. R5-FR-010). Retrieved on July 30, 2012, from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=41941

Poulin, R., Todd, L. D., Haug, E. A., Millsap, B. A., & Martell, M. S. (2011). Burrowing Owl (*Athene cunicularia*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/061

Raven, C. (1984). Northeastern California. In M. J. Moratto (Ed.), *California Archaeology*, (pp. 431-469). Orlando, Florida: Academic Press.

Reuven, Y. (1996). Loggerhead Shrike (*Lanius ludovicianus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/231

Reynolds, R. T., Graham, R. T., Reiser, M. H., Bassett, R. L., Kennedy, P. L., Boyce, Jr., D. A., Goodwin, G., Smith, R., & Fisher, E. L. (1992). *Management Recommendations for the Northern Goshawk in the Southwestern United States* (General Technical Report RM-217). Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Rost, G. R., & Bailey, J. A. (1979). Distribution of Mule Deer and Elk in Relation to Roads. *Journal of Wildlife Management, 43*, 634-641.

Ryser, Jr., F. A. (1985). *Birds of the Great Basin*. Reno, Nevada: University of Nevada Press.

Saucedo, G. J., & Wagner, D. L. (1992). *Geologic Map of the Chico Quadrangle, California* [Map]. 1:250,000. Regional Geologic Map Series. Sacramento, California: California Department of Conservation, California Geological Survey.

Sauer, J. R., Hines, J. E., Fallon, J. E., Pardieck, K. L., Ziolkowski, Jr., J. R., & Link, W. A. (2011). *The North American Breeding Bird Survey, Results and Analysis 1966 - 2009. Version 3.23.2011*. Retrieved from http://www.mbr-pwrc.usgs.gov/bbs

Schnieder, B. (Washoe County Health District, Air Quality Management Division). Personal communication with Aaron Hoberg (Air Quality Specialist, JBR Environmental Consultants, Inc.), Reno, Nevada. February 5, 2014.

Shuford, W. D., & Gardali, T. (Eds.). (2008). *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California: Studies of Western Birds No. 1*. Camarillo and Sacramento, California: Western Field Ornithologists and the California Department of Fish and Game.

Sierra County. (1996). *Sierra County General Plan*. Downieville, California: Sierra County Board of Supervisors, Planning Commission, and Planning Department.

Sierra County. (2012). *Sierra County: Part 15 Zoning*. Downieville, California: Sierra County, California.

Sierra County. (2013). [Interactive map of geographic information system zoning and property data for Sierra County].*Geographic Information System: Sierra County Online GIS Map*. Retrieved from http://www.sierracounty.ca.gov/index.aspx?NID=249

Soeller, S. A., & Nielsen, R. L. (1980). *Reno NW 7.5' Geology* [Map]. 1:24,000. Reno, Nevada: Nevada Bureau of Mines and Geology.

Sousa, P. J. (1987). *Habitat suitability index models: Hairy woodpecker* (U.S. Fish and Wildlife Service Biology Report No. 82 (10.146)). U.S. Department of the Interior, Fish and Wildlife Service.

Squires, J. R., & Kennedy, P. L. (2006). Northern Goshawk Ecology: An Assessment of Current Knowledge and Information Needs for Conservation and Management. *Studies in Avian Biology, 31*, 8-62.

Stebbins, R. C., & McGinnis, S. M. (2012). *Field Guide to Amphibians and Reptiles of California: Revised Edition* (California Natural History Guides). Berkeley and Los Angeles, California: University of California Press.

Thomas, D. H. (1982). An Overview of Central Great Basin Prehistory. In D. B. Madsen & J. F. O'Connell (Eds.), *Man and Environment in the Great Basin* (pp. 156-171). Washington, D.C.: Society for American Archaeology.

Tiehm, A. (2000). The Taxonomic History, Identity, and Distribution of the Nevada Endemic, Plagiobothrys Glomeratus (Boraginaceae). *Madrono 47*(3):159-163.

Truckee Meadows Regional Planning Agency (TMRPA). (2012). *Truckee Meadows Regional Plan*. Reno, Nevada: Truckee Meadows Regional Planning Agency.

United States Department of Energy. (2008). Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal Land in the 11 Western States (DOE/EIS-0386). Washington, D.C.: U.S. Department of Energy and U.S. Department of the Interior, Bureau of Land Management.

United States Environmental Protection Agency. (1998). *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*. Washington, D.C.: United States Environmental Protection Agency.

United States Environmental Protection Agency. (2012). *National Ambient Air Quality Standards (NAAQS)*. Retrieved on February 4, 2014, from http://www.epa.gov/air/criteria.html

United States Environmental Protection Agency. (2013). *Criteria Pollutant Area Summary Report* (The Green Book). Retrieved on May 28, 2014, from http://www.epa.gov/airquality/greenbook/ancl2.html

United States Farm Service Agency. (2013). *Nevada_2013_1m_NC* [Raster digital data from the National Agriculture Imagery Program]. Salt Lake City, Utah: U.S. Department of Agriculture, Farm Service Agency, Aerial Photography Field Office.

United States Fish and Wildlife Service (USFWS). (1986). *Recovery Plan for the Pacific Bald Eagle*. Portland, Oregon: U.S. Department of the Interior, Fish and Wildlife Service.

United States Fish and Wildlife Service (USFWS). (1995). *Recovery Plan for the Lahontan Cutthroat Trout*. Portland, Oregon: U.S. Department of the Interior, Fish and Wildlife Service.

United States Fish and Wildlife Service. (2007). *National Bald Eagle Management Guidelines*. U.S. Department of the Interior, Fish and Wildlife Service.

United States Fish and Wildlife Service (USFWS). (2008). *Birds of Conservation Concern: 200*8. Arlington, Virginia: U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management.

United States Forest Service (USFS). (1974). *National Forest Landscape Management, Volume 2: Agriculture Handbook 462*. U.S. Department of Agriculture, Forest Service.

United States Forest Service (USFS). (1986). *Toiyabe National Forest Land and Resource Management Plan*. U.S. Department of Agriculture, Forest Service, Toiyabe National Forest.

United States Forest Service (USFS). (2001). *Inventoried Roadless Areas (IRA) (2001 Rule)* [Vector digital data]. Sparks, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest.

United States Forest Service (USFS). (2004). *Sierra Nevada Forest Plan Amendment, Record of Decision (ROD)*. Vallejo, California: U.S. Department of Agriculture, Forest Service, Pacific Southwest Region and Intermountain Region.

United States Forest Service (USFS). (2005). *EvegTile64A* [Vector digital data of CALVEG classification]. Retrieved on February 5, 2014, from http:/www.fs.fed.us/r5/rsl/projects/gis/data/vegcovs/gbasin/ EvegTile64A.zip

United States Forest Service (USFS). (2007). *Wilderness* [Vector digital data of designated wilderness on the Humboldt-Toiyabe National Forest]. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2008a). *EvegTile17B_00_100k_v2* [Vector digital data of CALVEG classification]. Retrieved on June 27, 2013, from http://www.fs.usda.gov/detail/r5/rsl/projects/gis/data/vegcovs/nsierran/EvegTile17B_00_100K_v2.zip

United States Forest Service (USFS). (2008b). *Sage Steppe Ecosystem Restoration Strategy Final Environmental Impact Statement*. U.S. Department of Agriculture, Forest Service, Modoc National Forest, and U.S. Department of the Interior, Bureau of Land Management, Alturas Field Office.

United States Forest Service (USFS). (2009). *Environmental Assessment: Dog Valley Fuels Reduction and Ecosystem Enhancement Project*. Sierra County, California: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2010a). *Biological Evaluation/ Biological Assessment for Birds, Mammals, Fish, Amphibians, Insects and Plants: Dog Valley Fuels Reduction and Ecosystem Enhancement Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2010b). *Decision Notice/Finding of No Significant Impact: Dog Valley Fuels Reduction and Ecosystem Enhancement Project*. Sierra County, California: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2010c). *The Forest Service National Supplements to the FP-03*. Retrieved on May 22, 2013, from http://www.fs.fed.us/eng/transp/documents/doc/FSSSdirections091410.doc

United States Forest Service (USFS). (2011a). *Motor Vehicle Use Map: Carson and Bridgeport Ranger Districts: Humboldt- Toiyabe National Forest* [Map]. Retrieved from http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5305082.pdf

United States Forest Service (USFS). (2011b). *MVUM_BC_2011* [Vector digital data representation of the Motor Vehicle Use Map]. Sparks, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest.

United States Forest Service (USFS). (2011c). *Wildlife Biologist's Notes for the Mitchell, Stateline, and Peavine Routes*. Unpublished document.

United States Forest Service (USFS). (2011d). *Wildlife Specialist Report for the Dog Valley Route Adjustment Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2012a). *Biological Assessment/Biological Evaluation: Peavine Mountain Sustainable Trails and Restoration Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2012b). *Dog Valley Route Adjustment Project: Environmental Assessment*. Sierra County, California: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2012c). *Scoping Summary Report: Bordertown to California 120 kV Transmission Line EIS*. Sparks, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2013a). *Decision Memo: Peavine Mountain Sustainable Trails and Restoration Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2013b). *Planting* [Vector digital data of forest plantation areas]. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014a). *Specialist Report: Cultural Resources Bordertown to California 120 kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014b). *Specialist Report: Recreation Bordertown to California 120 kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014c). *Specialist Report: Roads and Transportation Bordertown to California 120 kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014d). *Specialist Report: Special Status Plants Bordertown to California 120kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014e). *Specialist Report: Special Status Wildlife Bordertown to California 120kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014f). *Specialist Report: Vegetation Resources Bordertown to California 120kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014g). *Specialist Report: Visual Resources Bordertown to California 120 kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014h). *Specialist Report: Water and Soils Bordertown to California 120 kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Forest Service (USFS). (2014i). *Wildfire and Fuels Management Bordertown to California 120 kV Transmission Line Project*. Carson City, Nevada: U.S. Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest, Carson Ranger District.

United States Geological Survey. (1967a, Photorevised 1982). *Reno NW Quadrangle, Nevada* [Map]. 1:24,000. 7.5 Minute Series. Reston, Virginia: U.S. Department of the Interior, U.S. Geological Survey.

United States Geological Survey. (1967b, Photorevised 1982). *Verdi Quadrangle, Nevada* [Map]. 1:24,000. 7.5 Minute Series. Reston, Virginia: U.S. Department of the Interior, U.S. Geological Survey.

United States Geological Survey. (1978). *Evans Canyon Quadrangle, California-Nevada* [Map]. 1:24,000. 7.5 Minute Series. Reston, Virginia: U.S. Department of the Interior, U.S. Geological Survey.

United States Geological Survey. (1981). *Dog Valley Quadrangle, California-Nevada* [Map]. 1:24,000. 7.5 Minute Series. Reston, Virginia: U.S. Department of the Interior, U.S. Geological Survey.

Warren and Schiffmacher LLC. (2007). *The Power Line Study: The Impact of a 120kV Power Line on Property Owner Behavior and Property Values*. Unpublished document prepared for Sierra Pacific Power Company.

Washoe County. (2005). *Nevada Community Wildfire Risk/Hazard Assessment Project: Washoe County*. Retrieved from http://www.rci-nv.com/reports/washoe/index.html

Washoe County. (2010). *Washoe County Master Plan-North Valleys Area Plan*. Reno, Nevada: Washoe County Department of Community Development.

Washoe County. (2011). *Washoe County Master Plan: Land Use and Transportation Element*. Reno, Nevada: Washoe County Department of Community Development.

Washoe County. (2012). *Assessor's Map Number 038-83* [Map]. 1:7,200. Reno, Nevada: State of Nevada, Washoe County Assessor's Office.

Washoe County. (2013a). [Interactive map of geographic information system data for Washoe County]. *Washoe County Quick Map*. Retrieved from http://wcgisweb.washoecounty.us/quickmap

Washoe County. (2013b). *Washoe County Development Code*. Reno, Nevada: Washoe County Community Services Department, Planning and Development.

Western Bat Working Group. (2005). *Species accounts*. Retrieved from http://www.wbwg.org/speciesinfo/species_accounts/species_accounts.html

Winder, S. (2012). *Conserving Native Pollinators. A literature review considering the appropriate use of buffers around Colorado rare plants.* Document prepared for BLM Colorado State Office. April 18, 2012.

Williams, M. J., Howell, J. T., True, G. H., & Tiehm, A. (1992). A Catalogue of Vascular Plants on Peavine Mountain. *Mentzelia: The Journal of The Northern Nevada Native Plant Society, 6*(2), 3-83.

Witham, C. W. (2000). *Current Knowledge and Conservation Status of Ivesia Webberi Gray (Rosaceae), the Webber Ivesia in Nevada*. Document prepared for the Nevada Natural Heritage Program, Department of Conservation and Natural Resources, Carson City, Nevada.

Woodbridge, B. (1998). Swainson's Hawk (Buteo swainsoni), In The Riparian Bird Conservation Plan: A Strategy for Reversing the Decline of Riparian-Associated Birds in California. California Partners in Flight.

Young, J. A., & Blank, R. R. (1995). Cheatgrass and Wildfires in the Intermountain West. In J. Lovich, J. Randall, & M. Kelly (Eds.), *Proceedings of the California Exotic Pest Plant Council Symposium '95*. Paper presented at 1995 California Exotic Pest Plant Council Symposium, Pacific Grove, California (pp. 6-8). Sacramento, California: California Exotic Pest Plant Council.

5.2 ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
AMSL	above mean sea level
BLM	Bureau of Land Management
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIAA	Cumulative Impact Analysis Area
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
COM	Construction, Operation, and Maintenance
CPUC	California Public Utilities Commission
EIS	environmental impact statement
EMF	electric and magnetic fields
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FSH	Forest Service Handbook
GIS	Geographic Information System
HPTP	Historic Properties Treatment Plan
Hz	Hertz
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEEE	Institute of Electrical and Electronics Engineers
JBR	JBR Environmental Consultants, Inc.
KOP	key observation point
kV	kilovolt
kV/m	kilovolts per meter
LCT	Lahontan cutthroat trout
MBTA	Migratory Bird Treaty Act
mG	milligauss
MIS	Management Indicator Species
MVUM	Motor Vehicle Use Map
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NFMA	National Forest Management Act
NFS	National Forest System
NNHP	Nevada Natural Heritage Program
NO_2	nitrogen dioxide
NOI	Notice of Intent

NPDES	National Pollution Discharge Eliminating System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
O_3	ozone
OHV	off-highway vehicle
PAC	Protected Activity Center
$PM_{2.5}$	particulate matter 2.5 microns
PM_{10}	particulate matter 10 microns
POD	Plan of Development
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Office
SPPC	Spill Prevention, Control and Countermeasure
SNFPA	Sierra Nevada Forest Plan Amendment
SO_2	sulfur dioxide
SOI	Sphere of Influence
SOPA	Schedule of Proposed Actions
SUP	special use permit
SWPPP	storm water pollution prevention plan
TCP	Traditional Cultural Property
TMRPA	Truckee Meadows Regional Planning Agency
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VMS	Visual Management System
VQO	Visual Quality Objective
VRM	Visual Resources Management

5.3 GLOSSARY

Ambient air. Any unconfined portion of the atmosphere; the outside air.

Analysis Area. The geographical context used for the analysis of direct and indirect effects on an environmental resource.

Best Management Practices (BMPs). Term used to describe a type or types of water pollution control. The term is often used with reference to the techniques, measures, or structural controls used to manage the quantity and improve the quality of stormwater runoff from construction sites.

Centerline travel road. Construction travel route between pole sites, which ideally will be located along the center of the ROW. To avoid steep terrain, the centerline travel road may be sited anywhere within the variable-width corridor.

Construction, Operation, and Maintenance (COM) Plan. Comprehensive guide used during construction, as well as for operation and maintenance of a transmission line that includes key contacts; maps of the transmission line alignment and ancillary facilities; access maps, copies of permits and associated permit conditions; and specific implementation plans for restoration, fire prevention, emergency response, protection of cultural resources, protection of sensitive species, protection of wetlands and streams, stormwater pollution prevention, fencing, and weed management.

Designated road. A NFS road that is designated for motor vehicle use pursuant to § 36 CFR 212.51 on a motor vehicle use map.

Designated trail. A NFS trail that is designated for motor vehicle use pursuant to § 36 CFR 212.51 on a motor vehicle use map; also referred to as a motorized trail in this EIS.

Diameter at Breast Height (DBH). The diameter of a standing tree trunk as measured approximately 4.5 feet above ground surface.

Easement. The right to use the real property of another, public or private, for a specific interest or purpose, such as for power lines, water pipelines, and other utilities.

Ephemeral stream. Stream channel that contains water only during and immediately after precipitation events.

Forested habitat. Type of wildlife habitat dominated by trees consisting of aspen, mixed conifer-fir, plantation, eastside pine, and/or Jeffery pine.

Forest product resources. Commodities of economic or other value that are obtained from harvesting trees, such as sawtimber, firewood, and Christmas trees.

Forest road or trail. A road or trail wholly or partly within or adjacent to and serving NFS land that the USFS determines is necessary for the protection, administration, and utilization of the NFS land and the use and development of its resources.

Getaway. The segment of a power line between a substation facility and the first pole structure from the substation. A getaway is essentially the segment of a power line that enter/exits a substation facility.

Habitat. The area, place, or natural environment in which an organism or biological population normally lives or occurs. A habitat is made up of physical factors such as soil, moisture, range of temperature, and availability of light as well as biotic factors such as the availability of food and the presence of predators.

Insulator. A material with negligible electrical or thermal conductivity, such as glass or porcelain.

Interdisciplinary Team. Group of USFS resource or subject matter specialists from various disciplines that are assembled to address effects of proposed land-management actions or decisions.

Intermittent stream. Stream that contains water seasonally during wet portions of the year.

Motorized trail. See "Designated trail".

NFS road. A forest road other than a road which has been authorized by a legally documented ROW held by a state, county, or other local public road authority.

NFS trail. A forest trail other than a trail which has been authorized by a legally documented ROW held by a state, county, or other local public road authority.

Occupied habitat (in reference to Dog Valley ivesia or Webber ivesia). For population occurrences on NFS land, the area where the species is present and a 500-meter buffer from the edge of the occurrence. The 500-meter buffer would accommodate pollinators associated with the occurrence.

Perennial stream. Stream that typically contains water continuously, throughout the year.

Potential habitat (in reference to Webber ivesia). Low sage plant communities with specific habitat attributes including the presence of a rocky pavement surface; presence of an argillic soil horizon; plant community composition and presence of associated plants; topographic position of the site; and, known elevation range of the species.

Project Area. General geographical location where the proposed project would occur.

Restoration. The process of returning or bringing back the original, former, or normal state or conditions of a site.

Right-of-way (ROW). An easement, lease, permit, or license that grants the right of access or a designated use, such as power line or water pipeline, to cross over, under, or through the land of another, including public or private lands.

Ruderal species. A plant that is adapted to disturbance, such as fire.

Storm Water Pollution Prevention Plan (SWPPP). A site-specific document that identifies the potential sources of stormwater pollution, describes stormwater control measures, such as best management practices (BMPs), to reduce or eliminate the identified pollutants, and that also identifies procedures operators will implement to comply with specific permit conditions. A SWPPP can be provided for a number of circumstances, but the most common is to address stormwater pollutants and runoff during construction activities.

Transmission line clearance area. The area beneath and to either side of overhead conductors and power poles from which trees and other obstructions must be removed to provide the clearance required by federal and state regulations.

Unauthorized road or trail. A road or trail that is not a forest road or trail or an authorized temporary road or trail and that is not included in a forest transportation atlas.

Under-build. Construction method in which a transmission line and a lower voltage distribution power line are strung on the same pole structures, with the distribution line being placed below the transmission line, lower on the pole structures.

Variable-Width Corridor. Area centered on the proposed transmission line in which all new access roads, pole sites, wire setup sites, staging areas, skid trails and landings, and all other construction-related surface disturbance would occur other than disturbance for widening existing roads. The corridor would measure 300 feet wide where slopes are 10 percent or less, and 600 feet wide where slopes are greater than 10 percent.

Watershed. Area of land that contains a common set of streams and rivers and topography that all drain surface water into a single larger body of water, such as a larger river.

5.4 INDEX

This page intentionally left blank.